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Antiquity

A QUARTERLY REVIEW OF ARCHAEOLOGY

Edited by Glyn Daniel

Vol. XXXIII No. 132 DECEMBER 1959

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THE ST NINIAN'S ISLE SILVER HOARD

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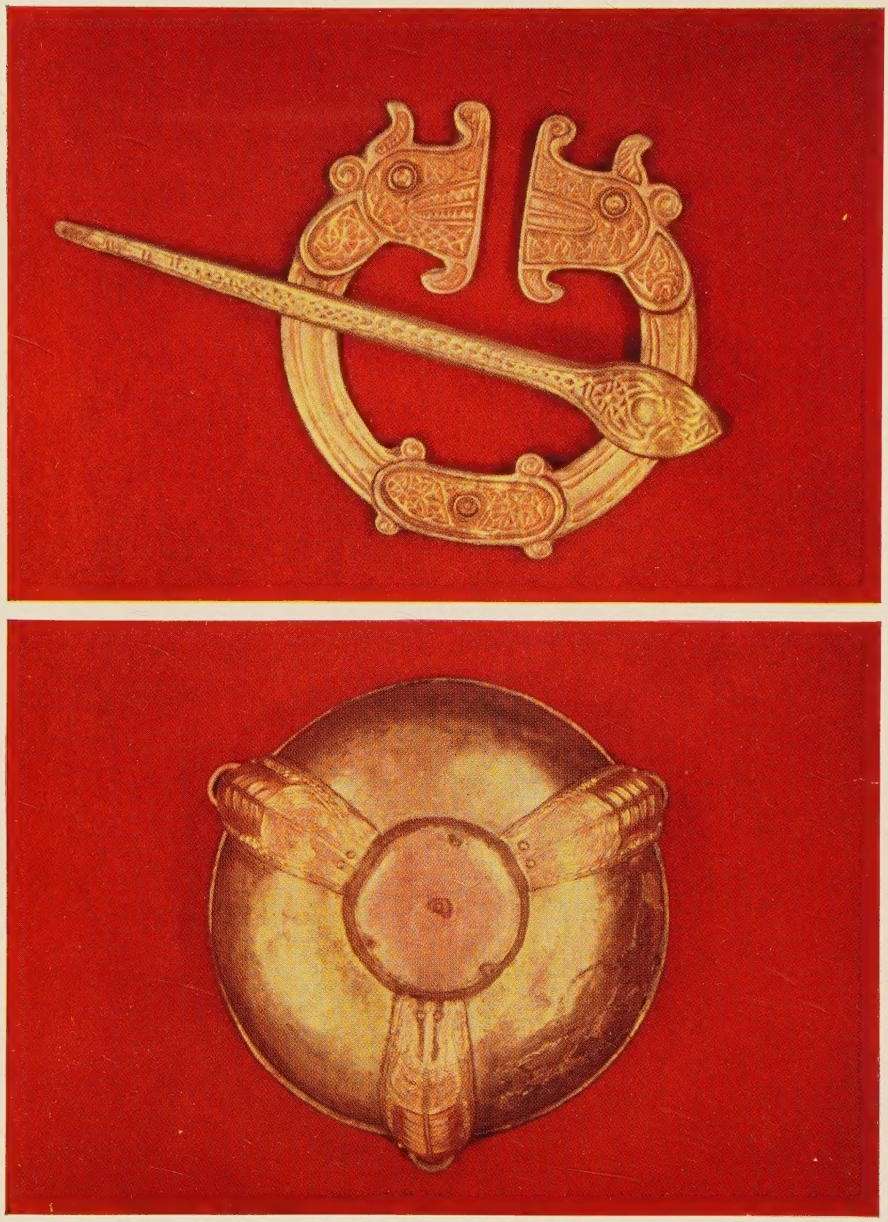

THE ST NINIAN'S ISLE HOARD

(*Top*) *Penannular brooch with zoomorphic terminals, Inventory No* 28 (*see also* Pl. XXXIII (*d*)). (*Bottom*) *External view of Hanging Bowl, Inventory No.* 8 (*this bowl has a repoussé basal disc, shown in place in* Pl. XXX (*b*)).

cf. pp. 255-8 *and* 262-8]

[*Photos:* Alexander Cain

Antiquity

VOL. XXXIII No. 132 DECEMBER 1959

Editorial

ALL readers of ANTIQUITY will join us in sending our congratulations to Dr L. S. B. Leakey and his wife on their discovery of the skull of an early Pleistocene hominid at Olduvai in July of this year. The first news of this discovery was given to the fourth Pan African Congress on Prehistory at Leopoldville on 23 August, and made public on 3 September. Mr Inskeep reports briefly on the Leopoldville Congress below (p. 287). Dr Leakey has given the scientific name of *Zinjanthropus boisei* to this hominid (coined from Zinj, an ancient name for East Africa, and Mr Charles Boise of London who has helped to finance Dr Leakey's researches), and nicknamed him ' Nutcracker Man ' because of his immensely powerful molar teeth. Dr Leakey lectured on what has been described as a ' stupendous discovery ' to the British Academy in London on 7 October, and claimed Nutcracker Man as ' the oldest well-established stone tool-maker ever found '. We print below (p. 285) a note of this lecture with a comment by Dr Kenneth Oakley.

We also print in this number an account of what has been described as one of the most remarkable discoveries made in the archaeology of the British Isles since the war, namely, the St Ninian's Isle Hoard. This was found on 4 July, 1958, on the now uninhabited Isle of St Ninian in the Shetlands during excavations directed by Professor A. C. O'Dell of the University of Aberdeen. Professor O'Dell has elsewhere written of this hoard that it was ' the greatest single find of native Celtic art in Scotland, which in its significance was comparable with the Anglo-Saxon hoard of Sutton Hoo found in 1939 '. ANTIQUITY devoted a whole number—the 53rd number—to a preliminary description of Sutton Hoo. We are pleased to be able to present now the preliminary description of the St Ninian's Isle Hoard and are grateful for the co-operation of the various scholars that has made this possible. That we have been able to illustrate the hoard fully, and with a colour plate—the first time ANTIQUITY has had a coloured illustration—is due to a generous grant for this specific purpose from the Russell Trust, which we are glad to acknowledge with appreciation and thanks.

In the 129th number of ANTIQUITY we published a preliminary report of the Morley St Peter Hoard of Saxon silver coins found near Norwich in January 1958. It is now reported that a total sum of £2,700, believed by the British Museum to be the largest reward ever paid for a coin Treasure Trove, has been given to the two workmen, Frederick Bird and

Alfred Harvey, who dug up the find. In December 1958 they shared a sum of £1,500, the full market value of 718 coins bought from the British Museum by the Norwich Castle Museum; now they share a further £1,200 for the remaining 163 coins of which 157 are retained in the British Museum and six were sold to Wymondham College, in the grounds of which the find was made. These payments are free of tax.

The September editorial was written by the shores of the Rice Lake in Ontario after visiting the Serpent Mounds site being excavated by Richard B. Johnston for the Division of Art and Archaeology of the Royal Ontario Museum. A sample of the carbonized remains of two small logs found in direct association with a partially cremated burial encountered near the eastern end of the Serpent Mound was submitted to the University of Michigan Memorial-Phoenix Project Radiocarbon Laboratory, and gave a date of 1830 ± 200 years B.P. or a date of A.D. 128. By the way, Dr Douglas Tushingham, Head of the Department of Art and Archaeology of the Royal Ontario Museum, has promised to comment on this site and the general problems of Canadian archaeology in a future number of ANTIQUITY.

The present editorial is being written in the Chateau of the Czechoslovak Academy of Sciences at Liblice near Melnik, where there was held in October an international conference on the problems of the Late Neolithic and Chalcolithic in Europe (ANTIQUITY, 1959, 158). From Ontario to Bohemia and far beyond discussion is increasingly centred on radiocarbon dates. But there is this great difference between dates in the New World and in the Old. In America dates are being produced for cultures and events which were at one time thought to be undateable, except by a rough and ready guesswork calculation back from dendrochronological dates. In Europe and the Near East the problem is quite a different one; it is that the radiocarbon dates are in many instances producing a chronology which, to put it mildly, seems at variance with archaeological dating. The early dates of Jericho surprised us all, and now many of us are being surprised by the radiocarbon dates for the Neolithic in Europe. We shall publish in March 1960 a summary of these Neolithic dates with comments from Professor Waterbolk. His date of 4175 ± 60 B.C. for a very early *Bandkeramik* site in the Netherlands is practically the oldest date for a Neolithic in Europe so far.

Other Neolithic dates, this time from France, were published recently by M. Giot (*Bulletin de la Société Préhistorique Française*, 1959, 292), and need repeating briefly here for the benefit of readers who do not regularly see that *Bulletin*, now so well edited by M. Guy Gaudron. The Passage Grave of Ile Carn, Ploudalmezeau, is older than 3000 B.C.; a Neolithic settlement site in the same vicinity in northern Finistère is older than 3100 B.C. and in a palynological sequence in central Finistère, Neolithic influence on vegetation is attested at 3210 ± 60 B.C. And we publish here the radiocarbon dates for the Nutbane Long Barrow of 2721 ± 150 B.C. (p. 289) and for Durrington Walls of 2620–2630 B.C. (p. 289). In this connexion readers should be reminded of the dates published by Godwin, Walker, and Willis in the *Proceedings of the Royal Society*, B, Volume 147 (1957), 364 of 2975 ± 134 B.C. for the transition between Zone VIIa and VIIb, i.e. the moment when, if the botanical evidence is correctly interpreted, the effect of Neolithic cultivation in Britain was felt.

Let us not pretend that these radiocarbon dates for the Neolithic in the Netherlands, in Brittany and in Britain are other than shaking. Professor Piggott's provisional chronological table in his *Neolithic Cultures of the British Isles* (Cambridge, 1954), gave no Neolithic culture in Britain before 2000 B.C., though admittedly Gordon Childe in the tables at the end of the seventh and last edition of his *Dawn of European Civilization* (London, 1957),

has the beginning of Windmill Hill getting back towards ' ? 2700 B.C.', Danubian I well before this and even has ' ? Dolmens ' well before ' ? 2700 B.C. '

The real question is: how far must we shake ourselves ? Giot's view is that the chronology of Piggott is far too short and that Childe was only half way to realizing the true dates. In his paper and discussions at the Czech conference and in many discussions and correspondence with the writer of these words he expresses firmly and forcibly the view that we must consider the Western Neolithic of Western Europe as established by 4000 B.C., the Passage Graves of Iberia in existence by 3500 B.C., and those of Brittany by at least 3250 B.C. Is this really the new chronological look of the beginnings of food-production in Western Europe that the Carbon 14 laboratories are forcing on us ? Readers will admire the courage of Professor Piggott's trenchant criticism of the Durrington Walls date of 2630–2620 B.C. ' This date,' he writes (p. 289 below) in words which will long be quoted in Honours Examinations in Archaeology, ' is archaeologically inacceptable '; and gives his reasons—very cogent ones they are, too.

They are good reasons because they mean laughing off a yawning millennium. We feel at this moment the same unhappiness. If Ile Carn is really 3000 B.C. and Iberian Passage Graves 3500 B.C., why are there no Pan European Bell Beaker dates before 2200 B.C. and no Los Millares date before 2340 B.C.? The Breton Passage Graves are characteristically equipped with Bell-Beakers and on archaeological criteria their floruit might well be from a little before 2000 B.C. to 1400 B.C. Where are we, when on the one hand we are asked to accept a date of 3000 B.C. for the Ile Carn Passage Grave, and on the other to accept dates of the 1st century B.C./1st century A.D. for the Gallery Grave at Tressé and the Passage Grave of Lochcrew H (shortly to be published in full by Dr Raftery) ? Can we, should we, shall we, escape by saying that the Ile Carn, Tressé and Lochcrew dates are ' archaeologically inacceptable ' ?

It is very important to realize that doubts about the archaeological acceptability of radiocarbon dates is not obscurantism nor another chapter in the battle of Science versus the Arts. It is an attempt to evaluate all the available evidence, physical and non-physical. Readers are particularly referred to Professor Piggott's ' Stonehenge, Science and Archaeology ' in *The New Scientist* for 30 July, 1959. Here he shows the relevance of the new radiocarbon date for Stonehenge, of which the national British Press made such fuss when it was first published. This is a date from broken deer antlers found in 1958 contemporary with the first phase of the final period of Stonehenge. The British Museum Research Laboratory date for these was 3670 $\pm$ 150 B.P., which meant that there was ' the two to one chance of the real date lying anywhere between 1860 and 1560 B.C.' (Piggott, *The New Scientist*, 30 July, 1959, p. 133). Piggott goes on to say in words that must be quoted in full, ' since statistically any date within this bracket is acceptable, we must interpret the figures in terms of the archaeological evidence. In this instance, if our equation between the building of the first phase of Stonehenge III and the rich Wessex Bronze Age culture . . . is accepted, we must take a date as near 1560 as possible, *for only by so doing can the dates obtained by the two methods—that of archaeology and that of physical science—be made consonant* '. (Our italics.)

Shake, Laugh Off, Refuse to Accept, Make Consonant: where are we ? We are at a moment when some of us at least are uncertain how to answer this question: when is a Carbon 14 reading an archaeological fact ? We certainly need reassurance beyond all reasonable doubt at the present moment that scientists know all about the variables involved, that Elsasser, Ney and Winckler are wrong in supposing that there was variation in the intensity of cosmic-ray formation and that others are wrong in supposing that there were fluctuations in the original C 14 content. And, when all is certain, we must have clusters of dates. It is

too soon as yet to rewrite our Western European prehistory of the Neolithic and Chalcolithic because of these new dates, but we will return to the significance of these dates in a future number of ANTIQUITY.

That was one of the great values of the Czech Academy conference—its detailed discussion of Neolithic and Chalcolithic chronology and the mutual relevance of archaeological and physical dates to this problem of prehistorical dating. The other value was, as we foresaw in the September editorial, the contact with people from all over Europe interested in the same archaeological problems. The barrier of language is one which affects archaeology more than most subjects; the student of the Neolithic and Chalcolithic in Western Europe, for example, is expected to be able to read, in addition to English, French, German, Spanish and Italian, and it is increasingly impossible to get far in the study of Eastern European prehistory without a knowledge of Russian. But there is a limit to the polyglottous nature and ability of archaeologists, and it would be idle to pretend that many archaeologists of this present generation are going to be good readers of Russian. Some are; they are favoured and diligent. For the majority of us it is a delightful relief to find that the Peabody Museum of Archaeology and Ethnology at Harvard, under the energetic direction of Dr J. O. Brew, has decided to issue a series of translations from the Russian language ' of selected important books and articles dealing with prehistoric archaeology and physical anthropology '. The first of the Russian Translation Series is *Ancient Population of Siberia and its Cultures*, by A. P. Okladnikov, and we welcome it, and the scheme of which it is the pioneer, most warmly. (It can be obtained at the Peabody Museum, 11 *Divinity Avenue, Cambridge* 38, *Massachusetts, U.S.A.*, price $3.50. It is pp. 95, including 25 pages of plates and 3 maps.)

Dr Brew tells us that the idea of this Russian Translation service was first put forward by Dr Henry Field, who himself published between 1935 and 1947 101 translations and abstracts of miscellaneous papers on the archaeology of the Soviet Union. Dr Field is now the general editor of the Translation series and was assisted in the preparation of Okladnikov's book by Professor Hallam L. Movius. ' The Russian Translation Series,' says Dr Brew with pardonable pride ' is presented by Dr Field and the staff of the Peabody Museum of Harvard University as a service to the scholars of the Western world '. Let us gratefully acknowledge our thanks for this newly inaugurated service.

We hear that the Spanish Institute is sponsoring an exhibition of full-sized water-colour copies of Spanish prehistoric rock paintings in the province of Castellon to be held in London from 2 February, 1960, in the St George's Gallery, 7 Cork Street, London, W.1. These copies were made by Sr Juan Porcar, and come from two sites in the Valltorto and Gasulla gorges.

We are pleased to report that the year 1959 has seen a further increase in the number of subscribers to ANTIQUITY. During 1960 we hope to include an account by Professor Werner Krämer of his work on the Celtic *oppidum* of Manching, Professor Christopher Hawkes's scheme for the British Bronze Age, a fresh comment on the St Ninian's Isle inscriptions (see pp. 250–55 below) by Professor Kenneth Jackson, an account of the Occurrence of Fired Bricks in Pre-Conquest Mexico, a study of cremation in Anglo-Saxon times by Dr Calvin Wells, and a report on Pisdeli Tepe and the archaeology of the Solduz Valley in Iran by Robert H. Dyson, Jr, and T. Cuyler Young, Jr.

The St Ninian's Isle Silver Hoard

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6. *Comments on the Bowls and Miscellaneous Silver, and General Conclusions: by* R. L. S. BRUCE-MITFORD – – – – – – – – – 257

A full account of the remarkable hoard of Celtic metalwork found on the Isle of St Ninian in Shetland in 1958 *will not appear for some time. In this preliminary account Professor A. C. O'Dell, Head of the Department of Geography at Aberdeen University, who was in charge of the excavations during which the hoard was found, writes of its discovery; Mr Bruce-Mitford, Keeper of British and Mediaeval Antiquities in the British Museum, and Mr Robert Stevenson, Keeper of the National Museum of Antiquities of Scotland, describe the objects and discuss their cultural and historical significance. Dr H. J. Plenderleith, formerly Keeper of the British Museum Research Laboratory and now Director of the International Centre for the Study of the Preservation and the Restoration of Cultural Property, at Rome, writes of the problems of restoring and preserving the finds, and Mr Julian Brown, Assistant Keeper in the Department of Manuscripts in the British Museum, writes on the inscriptions.*

1. INTRODUCTION

ST NINIAN founded his missionary centre of *Candida Casa* at the Isle of Whithorn in 397, and from this point a trail of ancient Ninianic dedications extends northwards as far as the Shetland Islands. There are at least three Ninianic chapel or church dedications in the Shetland Islands and of these the best known is that on St Ninian's Isle off the west coast of Dunrossness (Fig. 1 (*a*) and (*b*)). The church on this site was described early in the 18th century as being still venerated by local people although it had been abandoned at the Reformation in favour of a more central parish church. Various descriptions are extant of the building but unfortunately all were made after its destruction in *c.* 1750 and depended, in the main, on hearsay. From the sandy spit, which has formed between the mainland and the isle, gales have carried sand and this, together with the accretion of a graveyard in use until *c.* 1850, buried the church remains and all knowledge of its exact location had vanished from living memory.

At the occasion of the first Viking Congress in 1951 Dr W. Douglas Simpson suggested a search might prove rewarding and this was undertaken in 1955 by a party of my students under my direction. The results in this and succeeding years have exceeded expectations: 1955, apse and altar of the church were located, 1956–7 the nave was cleared and 1957–8 test examination was made below the foundations of a building which dates from the mid-

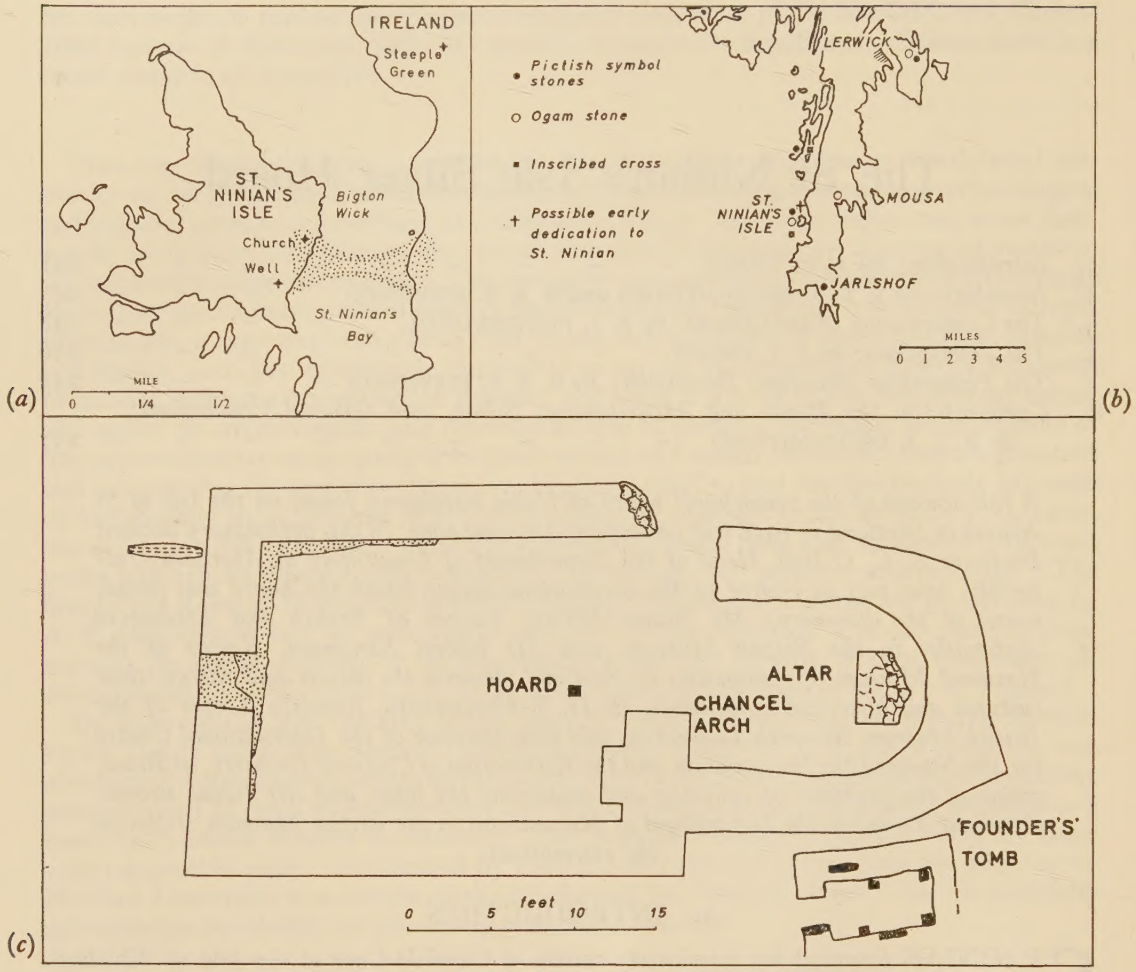

Fig. 1. (a) Site of St Ninian's Church. Ireland is the 'Ayreland', traditionally the site of the steeple of the Old Church. (b) Dark Age remains on the south of Mainland, Shetland. (c) Plan of St Ninians' Church, with 'Founder's Tomb' showing position of seven post-stones.

12th century. In the preliminary search for earlier church structures an Iron Age site has been identified with pottery suggestive of the 2nd century A.D.

Finds have been rewarding, although the stratigraphy has been confused in the extreme with the numerous post-Reformation burials. The more noteworthy ecclesiastical items are a polished fragment of *porfido verde antico*, seven post-stones, five of which are carved with Pictish symbols, of a shrine which Mr C. R. Ralegh Radford dates to *c.*800 and to the north a garth wall. The medieval building with its massive mortared walls, main altar and a side altar had made the excavation noteworthy before 4 July, 1958, when the hoard was discovered (Fig. 1 (*c*)).

Close to the southern chancel arch foundation, and missed by inches by later burials, was found a broken sandstone slab, 10½ in. by 15 in., lightly inscribed with a cross and, below this, was the hoard. It had been contained in a larch box of which a few splinters,

impregnated with metal salts, had escaped decay. The bowls were upside down and the brooches and other objects tangled together, showing it had been hurriedly carried and buried with the top down. In with the objects was the porpoise jawbone and this, the only non-metallic object, is strong evidence of its ecclesiastical connection, although the brooches suggest a secular link. There is no obvious reason why the whole might not have been the votive offering treasure of a church community. All the objects were within the dark brown traces of the box and although the ground above had been disturbed to the extent of containing an intruded fragment of an Iron Age pot, the hoard itself and the earth immediately round it had no evidence of disturbance since burial, and everything points to it having remained untouched since it had been hidden for safety on the approach of the pagan Norse just over eleven centuries ago.

A. C. O.

Fig. 2. Silver Bowl, ornament extended. Inventory No. 2. Scale 1/2

2. INVENTORY

All the metal objects are silver (see p. 248). The hoard consists of twenty-seven items in metal and a bone. The metal items are: seven small shallow bowls or dishes; a spoon; a fork-like implement having one prong and a small cutting-edge; a sword pommel; three heavily-decorated hollow cones of uncertain use; two horse-shoe-shaped objects that appear to be chapes, one with an important inscription; and twelve penannular brooches. The bone is the jawbone of a porpoise, a natural bone without trace of decoration or manipulation[1].

[1] The line-drawings Figs. 2–4, 6–8 are by Mrs Eva Wilson. Figs. 5 and 10–14 are by Mr C. O. Waterhouse, M.B.E., the British Museum's official draughtsman from 1 April, 1915, to 30 September, 1959.

Fig. 3. Silver Bowl, ornament extended. Inventory No. 3 (see Plate XXVI. (c)) Scale 3/5.

1. *Bowl*, d. 5·9 in., depth 2·25 in., with chased design of five intersecting circles, closely flanked by single lines of dots, forming under the base an equal-armed cross, deliberately accentuated. No basal depression. (PLATE XXV (*a*), (*b*))
2. *Bowl*, d. 5·75 in., depth 1·9 in., with procession of four contorted animals on a background of dots. Shallow basal depression. (PLATE XXVI (*b*); FIG. 2)
3. *Bowl*, distorted, d. originally approximately 5·75 in., depth 1·6 in., with rolled-out rim and design of four pairs of grotesque animals, facing outwards, with interlocked bodies, against a background of dots. Deep basal depression or countersinking, with marigold pattern under base. (PLATE XXVI (*c*); FIG. 3)
4. *Bowl*, d. 5·7 in., depth 1·6 in., with rolled-out rim (largely broken away) and design of triangles and of thick and fine interlaces executed in punched dots. Shallow basal depression. (PLATE XXVI (*a*))
5. *Bowl*, d. 5·8 in., depth 1·3 in., of thicker metal than the others and with flatter base and more vertical sides, with design of interlocked, alternately inverted T-shaped panels below the rim, and, on the body, of tapered ovals radiating from the base. No basal depression. (PLATES XXVII (*a*), XXIX (*b*))
6. *Bowl*, d. 5·6 in., depth 1·4 in., in good condition, with geometric and running-interlace designs. Basal depression, with a secondary gilt escutcheon (PLATE XXXII (*d*)) mounted in the interior of the bowl on the central raised portion. The raised triangular frame of the escutcheon has human masks at the corners and the central setting contains red enamel. The escutcheon carries an openwork interlace in three panels, in one of which the interlace has zoomorphic elements. (PLATES XXVII (*b*), XXIX (*a*), XXXII (*d*))
7. *Bowl*, smaller than Nos. 1–6, d. 5·1 in., depth 1·4 in., in good condition with delicately executed running interlace, thick and thin, in two zones. Basal depression with whirl-pattern in dots. (PLATE XXVIII (*a*), (*b*))

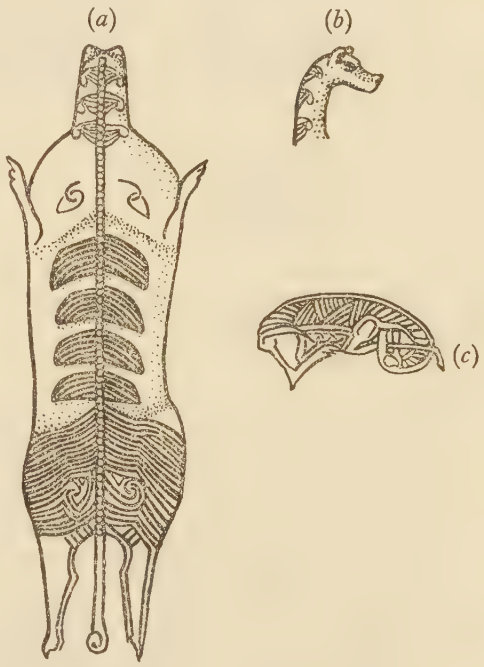

Fig. 4. Hanging bowl, details. No. 8. Scale 1/1.

8. *Hanging-bowl*, with gilt escutcheons; d. 5·5 in., depth 1·75 in., with the deeply countersunk base, full body and the distinctive rim-formation of Dr Françoise Henry's Group B;[2] with three oblong external escutcheons in the form of spreadeagled boars, a circular escutcheon, with procession of hatched animals, in the interior, and a sheet-silver disc, with repoussé trumpet-pattern, under the base. (PLATES XXIX (*c*), XXX (*a*), (*b*) and FRONTISPIECE and FIG. 4)

[2] F. Henry, ' Hanging Bowls ', *Journal of the Royal Society of Antiquaries of Ireland*, LXVI, 1936, p. 217 Fig. 5 (*c*), p. 231 *et seq.* Typical examples of this distinctive rim-form are the Winchester, Lowbury and Lullingstone bowls.

9. *Spoon*, l. 8·5 in., of slight construction, made from a single strip of silver hammered out at one end to form the bowl, its edges folded under to give thickness to the handle, the other end trimmed to a point and rolled forwards to make a ring for suspension. A cast dog's head, with blue glass eyes, is fixed by a shank to the stem of the spoon, where the bowl develops. (PLATE XXXI (*a*)–(*c*))

Fig. 5. One-pronged implement. Inventory No. 10. Scale 1/1.

10. *One-pronged implement*, l. 6·6 in., with stem of squared section, with central and terminal baluster-mouldings, perforated at the end for a suspension-ring, part of which remains. At the base of the prong is a small projecting cutting-edge. (PLATE XXXI (*d*) and FIG. 5)
11. *Sword-pommel*. gilt, l. 2·15 in., of cocked-hat form, with carved animal ornament in panels. (PLATE XXXII (*h*) and FIG. 6)
12. *Conical mounting*, gilt, h. 1·75 in., covered all over with symmetrically arranged animal-interlace. (PLATES XXXI (*e*), (*h*), XXXII (*a*), (*e*); FIG. 7)
13. *Conical mounting*, gilt, h. 1·6 in., with four panels of interlace and of animal ornament alternately, in arched frames. (PLATE XXXI (*f*), (*i*), PLATE XXXII (*c*); FIG. 8 (*c*))
14. *Conical mounting*, gilt, h. 1·5 in., covered all over with spirals, hair-spring coils and other Celtic curvilinear themes. (PLATES XXXI (*g*), (*j*), XXXII (*b*), (*f*), (*g*))
15. *Chape, or horse-shoe-shaped mounting*, gilt, maximum width 3·15 in., flattish in cross-section and open along the inner edge, with zoomorphic terminals. Both faces carry an inscription, discussed on pp. 250–55. (PLATE XXXII (*k*), (*l*), Fig. 9)
16. *Chape, or horse-shoe-shaped mounting*, maximum width 3·2 in., in mint condition and ungilded; one side showing a deeply-cut hatched pattern, the other having two panels, separated by a cross of spirals, each panel containing a pair of interlocked animals. (PLATE XXXII (*i*), (*j*); FIG. 8, *a*, *b*)

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17. *Penannular brooch*, large, with wide flat hoop, terminals of triangular form and interlace designs in countersunk panels, maximum d. 4·5 in., width of hoop 1·25 in. (PLATE XXXIII (*a*))
18.[3] *Penannular brooch* with triangular terminals resembling in outline those of No. 17. (PLATE XXXIV (*f*))
19. *Penannular brooch* with square terminals. (PLATE XXXIII (*b*))
20. *Penannular brooch* with quatrefoil terminals and interlace on the hoop and animal-head finials projecting from the terminal lobes. (PLATE XXXIII (*c*))
21. *Penannular brooch* with quatrefoil terminals, pin defective, ungilt and of poor quality silver, with degenerate bird-heads around the terminals contained within crescents. (PLATE XXXIII (*f*))
22. *Penannular brooch* with quatrefoil terminals, the cartouche on the hoop having two inward-facing bird-heads with beaks overlapping a central disc. (PLATE XXXIII (*e*))
23. *Penannular brooch* with quatrefoil terminals, the concentric circles in the central disc of the terminal being broken into three segments by groups of

[3] The eleven brooches, Nos. 18–28, are all of approximately the same size: maximum diameters vary between 3.0 and 3.5 in., hoops vary in width between 0.3 and 0.4 in., and pins are between 5.0 and 5.75 in. long. Individual measurements will not be given here.

Fig. 6. Sword-pommel, two panels and details. Inventory No. 11. Scale 1/1.

Fig. 7. 'Pepper-pot', extended details. Inventory No. 12. Scale 1/1.

Fig. 8 (a) and (b). Strapend panel and details. Inventory No. 16. (c) 'Pepper-pot', panel. Inventory No. 13. Scales 1/1.

straight mouldings. (PLATE XXXIV (*d*))

24. *Penannular brooch* with quatrefoil terminals. PLATE XXXIV (*e*))
25. *Penannular brooch* with quatrefoil terminals having interlace in the central discs of the terminals and glass settings in each lobe. (PLATE XXXIV (*c*))
26. *Ditto.* (PLATE XXXIV (*b*))
27. *Ditto.* (PLATE XXXIV (*a*))
28. *Penannular brooch* with zoomorphic terminals. (PLATE XXXIII (*d*)) and FRONTISPIECE

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29. *Porpoise bone,*[4] d. 8·1 in.; stained a pale green; the right half of the lower jaw of a full-grown porpoise (*Phocaena communis*). Intact except the absence of teeth (lost after death) and the presence of a triradiate crack in the broad thin part of the bone. (Not illustrated.)

3. THE CONSERVATION OF THE OBJECTS

When the St Ninian's hoard was first exposed to view in the Laboratory its unique character was immediately apparent; shapes, inlays, ornament and even the material condition of the objects all offered a prospect of recovering something really interesting and it was clear, at the same time, that the work would involve devising new techniques of procedure. The true nature of the metal, which was concealed by a greenish earthy coating of copper compounds, was revealed by spectrograph to be a silver alloy containing copper as a minor constituent together with smaller quantities of lead and tin, and in certain cases gold was present too. The gold proved later to be a purely superficial coating that had been applied to certain objects only in the collection.

A preliminary classification was made into three groups as follows: seven bowls (some broken or incomplete), twelve penannular brooches and several other objects of a more or less indeterminate nature, some of which were later recognized to be appliqués, perhaps used to adorn a leather baldric no longer surviving. It may be stated at once that the main problem of conservation was to remove the corroding copper without unduly weakening the objects mechanically, as this, if left *in situ*, would accelerate deterioration. It was important also to reveal and to preserve all the ornament, to preserve any other features of interest that might help in the archaeological interpretation and to consider what might be possible in the way of repairs. This involved the application of various processes depending upon the nature and condition of the objects, individual treatment being a *sine qua non* of success. A synopsis of the laboratory work is appended:

The Bowls. At the time of excavation the bowls were more or less in a pile one inside the other, the topmost being inverted, and although dented, it was in better condition than the others. This bowl responded to treatment with hot formic acid (30 per cent) which removed a thin layer of copper compounds within half an hour, and after washing in changes of distilled water it was stabilized with sodium sesquicarbonate and no further chemical treatment was required. The metal, however, was fractured in places and so brittle that no attempt could be made to remove dents. Formic acid was used freely in cleaning all the silver objects, sometimes by immersing the corroded silver, and at other times by strictly local application.

One of the underlying bowls was unique in that it was furnished with three symmetrically-placed gilt metal escutcheons and hanging rings and it had externally under the base a thin circular silver escutcheon and apparently an internal liner of silver. The latter, however, turned out to be an entirely unrelated silver bowl that had become wedged in the other. Upon releasing it, a fine gilt escutcheon was found in the centre of the underlying

[4] This description supplied by John McKenzie, M.D., F.S.A.

hanging bowl which is thus complete though excessively frail. Indeed, part of the wall of the vessel had already collapsed and to restore this object was a major task, the following being among the many operations required:—

> Use of various forms of temporary reinforcement. Cleaning by using a fine spray of bauxite grit. Chemical treatment applied locally, the action being encouraged by the use of an ultrasonic field. Reincorporation of many cleaned fragments of silver by setting them in position in a transparent coating of a plasticized epoxy-resin, which served also to add strength, and finally coating the exposed metal inside and outside with thin layers of a protective synthetic lacquer.

The removal of yet another bowl from the pile exposed a very fine triangular escutcheon of gilt metal attached to the centre of the bowl immediately beneath it. All gilt surfaces were dealt with painstakingly under a binocular microscope by applying a fine camel hair brush wetted with nitric acid (1 per cent). This removed the earthy green corrosion and immediate washing with distilled water applied on pellets of filter-paper arrested any tendency for the solvent action to become uncontrolled.

As for the remaining bowls, in some cases they were consolidated by remaking a missing rim or reinforcing a fractured edge by the attachment of thin ribbons of silver; in other cases lacunae were filled with Fibrenyl, a fibrous gap-filling material coloured to match the old silver. Even so, there were conditions of the metal that defied restoration. There were, for example, two instances of a stratified and swollen condition of the metal occurring on one side only of a bowl, and this precluded all chance of removing the causes of decay without at the same time destroying much of the design. A practical limit was thus set to the possibilities of restoration and it was necessary to work on the principle that interests would be best served by designing desiccator cases to contain the collection after its treatment in the laboratory; by this means, using silica gel as a desiccating agent, the cuprous chloride which in presence of moisture is the main agent in promoting corrosion could be allowed to remain and to contribute somewhat to the already limited mechanical strength of the metal. Originally of paper-thinness, the leaching out of the copper constituent of the silver alloy had left the bowls in the form of a porous net-work of thin silver, far from being as robust as appearances might lead one to believe. The ultimate solution of all the problems that concerned the preservation of the collection depended upon the decision to use desiccator cases, and this may be of significance as it is believed to be the earliest example of portable desiccator cases being employed in the conservation of antiquities. It is a method that can be recommended in instances where, for any reason, the complete elimination of cuprous chloride from corroding metal is either impossible or undesirable.

The Brooches. These were all treated more or less in the same manner under the binocular and they presented no new problems in restoration.

One of the series of penannulars was larger and finer than all the other though, unfortunately, it was incomplete, the inlays being absent and the pin in fragmentary condition. A green muddy deposit in one of its settings consisted largely of carbonate and this may give a clue to the nature of the inlay which may either have been shell (stained green with corrosion) or perhaps it was once a malachite or azurite nodule.

The interlacing pattern on the pin was recovered in full detail by exposing the gold under the binocular and two fragments of the ring attachment of the pin were found among the débris, one metallic and the other entirely mineralized. The pin was restored as far as possible by mounting the parts on a supporting split of Perspex.

The Other Objects. Two thin metal rods provided one of the minor puzzles until, on working on the débris, fragments were discovered which, on being cleaned and freed from mineralization, were found to fit perfectly to the fractured ends of the rods, thus trans-

forming them into a spoon and a single-pronged fork respectively. On treating one small green nodule that remained, it emerged from the hot formic acid as a tiny dog's head and this was found to fit snugly into a hole in the neck of the spoon, the nature of which had been up till then a mystery.

The work on the belt-ends was concentrated upon preserving the inscriptions and revealing both ornament and evidence of method of manufacture (rivets and joints) and a similar study was carried out in the case of the pommel, from which there came a substantial silver pin suggesting that this object may have been brought into service as a brooch in latter days.

Finally, there are the three domed ornaments which have certainly been appliqués of some kind and in which the gold may be seen to have been worn away by rubbing on the projecting points. In one case careful dissection of the incrustation revealed the imprint of a loose metal reinforcement, still extant under the base inside the object. This suggests that it was designed to be attached by a leather thong, but the weight and the leverage of such rather unwieldy ornaments, if attached to a baldric or something of the kind, must have been so considerable as to render them unsuitable for other than ceremonial wear. The evidence for attachment was obviously of importance and was preserved as far as possible for study, while the envelope bearing the gilt interlacing pattern was thoroughly deoxidized to expose all the ornament.

It only remains to add that the collection provides a wealth of technical interest rarely equalled in our experience. The methods of manufacture, the types of ancient repair, the nature of the gilding and of the inlays, all call for detailed study and, for the Museum Laboratory, the work of restoration has been an exercise in patience and ingenuity that has been its own reward in that it has afforded experience in modifying and adapting standard techniques and in developing new ones for the preservation of frail and delicate material, and these are certain to be of value in future.

H. J. P.

4. THE INSCRIPTIONS

The older of the two chape-like objects found on St Ninian's Isle is inscribed on both sides (No. 15; PL. XXXII (*k*), (*l*)). The inscription on the more decorative side (the *recto*) has been read by Professor Kenneth Jackson as *in nomine d.s.* The formula *in nomine Dei summi* occurs on three Welsh crosses of the 9th to 11th centuries,[5] where *Dei* is abbreviated in the normal way (*Di.*) and *summi* is written out in full or abbreviated as *sūmi.* Considering the small size of the ' chape ' and the marked reduction of *o*, presumably to save space, it seems easier to accept *d.s.*, meaning *Dei summi*, than *ds.*, which is the correct abbreviation for *Deus* but which involves an elementary mistake in grammar. The bold and stately style of the inscription on the *recto* strongly suggests that the writer was copying the very formal and evolved variety of Insular majuscule handwriting found in manuscripts such as the Lindisfarne Gospels (*c.* 698; E. A. Lowe, *Codices Latini Antiquiores*, ii, No. 187) and the Book of Kells (*c.* 800 or rather earlier; Lowe, *CLA*, ii, No. 274). FIG. 9 (*a*) shows roughly how the words would look in a manuscript. The typically Insular ' wedges ' at the beginning of *i*, *n* and *m* and at the top of the first stroke in *s* have been replaced in the inscription by hooks, as in the less formal but no less Insular inscription on the *verso*. The letter *m* is divided, between the second and third minims, by one of the three quatrefoil bosses. There is a bold serif at the end of the crossbar of *e*, where formal majuscule allowed a square or triangular serif. The inscription on the *recto* was written with some care and the strokes

[5] V. E. Nash-Williams, *The Early Christian Monuments of Wales*, 1950, p. 41, Nos. 223, 233, 237.

are widened at the ends to form neat triangular serifs. The formal variety of Insular majuscule seems to have been evolved in Northumbria, probably at Lindisfarne, in the last decade of the 7th century. It was still in use at Lindisfarne in the second quarter of the 9th century, witness the Lindisfarne ' Liber Vitae ' (B.M., Cotton MS. Domitian vii; B.M., *Cat. Anct. MSS., Lat.*, pp. 81–4, pl. 25), and in Ireland a provincial version of it occurs in the Gospels of MacRegol, 8th–9th century, before 822 (Lowe, *CLA*, ii, No. 231). If there is anything in the theory that the Book of Kells was written at Iona, the hand was known in Scotland by *c.* 800 at the latest. The style of the writing on the *recto* is perfectly consistent with a date in the second half of the 8th century.

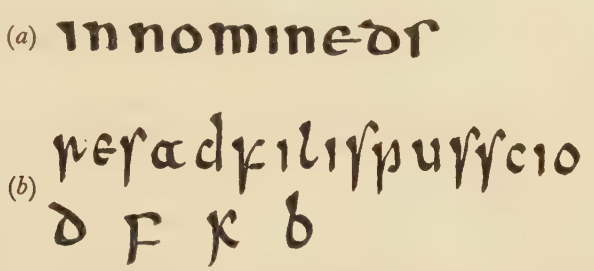


Fig. 9. Inscriptions on (*a*) *the* recto, (*b*) *the* verso *of the inscribed chape* (*No. 15*). *Alternative readings of* (*b*) *on the line below.*

The inscription on the *verso* is less carefully executed and less formal in style. It reads as follows:

RESADF(*or* K)ILISPU(*or* B)SSCIO.

With the exception of the ' horned ' half-uncial *a*, which before the year 800 is practically confined to Insular majuscule, the letter-forms are appropriate to either majuscule or minuscule, but the cursive formation of the deeply split *s* and of the angular *p* associates the inscription with minuscule rather than majuscule handwriting and shows that the maker was himself accustomed to writing minuscule. Further, excepting uncial *d* on the *recto*, neither side contains any of the uncial letters (*d*, *n*, *r*, *s*) normally found as alternative forms in Insular majuscule. The writing on the *verso* is much rougher in general appearance than on the *recto*. ' Wedges ' are represented by hooks, as on the *recto*, but there are no serifs at the tops of the strokes; they are missing from the bottoms of *r*, the first *s* and *f* (or *k*); and where they do occur (from the first *i* onwards) they are not the neat triangles of the *recto*.

The change of style between *recto* and *verso* seems to correspond to a change of hand. There is no need to suppose any substantial difference in date, since Insular minuscule was fully developed by the end of the 7th century (it occurs in the Echternach Gospels; Lowe, *CLA*, v, No. 578). It had a far longer life than Insular majuscule, and occasional examples containing the ' horned ' half-uncial *a* were produced in England in the 10th century.[6] The formal majuscule on the *recto* is a surer guide to the date of the ' chape '. The chief interest of the contrast between *recto* and *verso* seems to be this. The inscription on the *recto* looks like the work of a skilled craftsman, since the curves are all very uniform and the serifs are all very neat and regular; but his failure to join all the minims in *n* and *m* and the extravagance of the hook representing the wedge in *s* suggest that he may not himself have been

[6] N. R. Ker, *Catalogue of Manuscripts containing Anglo-Saxon*, 1957, p. xxviii.

literate. The writer of the *verso*, on the other hand, seems to have been technically less accomplished, but his familiarity with cursive minuscule forms suggests that he was literate. The ' chape ' may have been dedicated to God in the workshop, and only subsequently inscribed with a note of ownership (see below).

FIG. 9 (*b*) shows roughly how the inscription on the *verso* would look in a manuscript: alternative readings are given on the line below.[7] The following letters call for comment:

(*a*) The first letter is a normal Insular half-uncial *r*, except for the thick blob, apparently not accidental, at the end of the second stroke. The square serif sometimes used in majuscule at the ends of thin strokes such as the crossbars of *e* and *t* was not used in this position. The blob can hardly represent a median point.

(*b*) The *d* is probably meant for the half-uncial letter, in which the bow normally did not join the stem at the top. Compare the uncial *d* on the *recto*, and see FIG. 9 (*b*), 2nd line. Uncial *d* was allowed in minuscule.

(*c*) The *f* is important and difficult. Note that the upper bar slopes while the lower is horizontal. As it stands the letter is nothing like a majuscule *f*, in which both bars are horizontal (FIG. 9 (*b*), 2nd line). In minuscule, where the letters are cursively formed, the upper bar is made in one stroke with the descender, so that the beginning of the letter is split and resembles *s*; the lower bar is added separately, and remains horizontal. Our letter may well be a cursive *f*, but if so it is odd that the second stroke, forming the upper bar, should be quite separate from the first, descending stroke. In all the accompanying *s*'s the proper minuscule relationship between first and second strokes is clearly indicated. For this reason *k* (FIG. 9 (*b*), 2nd line), in which, however, the lower bar ought to slope downwards, remains a possibility, at least from the palaeographical point of view. Both *f* and *k* begin with a ' wedge ', so the total absence of a hook at the top of the first stroke is no help in deciding between them. Although *k* was familiar to clerics in *Kalendae*, it does not occur in inscriptions from the Celtic parts of Britain.

(*d*) The angular bow of the *p* is normal in minuscule, and if the letter looks odd it is only because it has been pushed upwards, since there was no room for the descender to fall below the base-line in the usual way.

(*e*) The letter after *p* is not quite right for *u*, since there is no nick between the first and second strokes; but the similar nick normally found between the first and second strokes of half-uncial *d* is also wanting here. The angularity of the second stroke in our letter suggests that it is meant for a minim surmounted by a ' wedge ' (in *u*) and not for the rounded second stroke of *b* (FIG. 9 (*b*), 2nd line). The letters *e*, *a*, *c*, and *o* are carefully rounded; and yet the first stroke of our letter, whether intended for *u* or for *b*, ought not to be angular but smoothly curved, exactly like the *l* further back in the line. Although *u* seems rather more likely, *b* is not entirely out of the question.

What does the inscription on the *verso* mean ? It is probably in Latin, like the *recto*. To read *fili spus. sci.*, meaning ' of the Son and of the Holy Spirit ', seems impossible. The abbreviations are correct, but no sense can be made of *resad* before and the isolated *o* after. Professor Kenneth Jackson reads *Resad fili Spusscio*, meaning ' [The property of] Resad son of Spusscio '. He points out that ' x son of y ', nearly always in the genitive and generally in Celtic (' x maqi y '), but sometimes also in Latin (' x fili y '), is the formula most commonly inscribed on Celtic grave-stones or boundary-stones.[8] He adds that in this case the

[7] An actual example of a cursive but elegant Insular minuscule is Lowe, *CLA*, ii, No. 234 (England, 8th–9th century); for a more formal minuscule, see *CLA*, ii, No. 129 (England, late 8th century).

[8] For the Celtic formula ' x maqi y ' in Ireland, see R. A. S. Macalister, *Corpus Inscriptionum Insularum Celticarum*, vol. i, 1945, p. 10; for the Celtic formula and its Latin translation in Wales (the two are sometimes found together on bilingual stones), see Nash-Williams, *Monuments*, pp. 4–8.

two names are unknown and so are not unlikely to be Pictish. Shetland is in Pictish territory and there are plenty of Pictish names that sound far stranger than Resad and Spusscio. At least three Pictish inscriptions in Ogams are of the form ' x maqq *or* meqq y ', the central word having been borrowed by the Picts from the Celts.[9] Two of the three are from Shetland, having been found at Bressay and St Ninian's Isle itself.[10] Again, two Pictish inscriptions, from St Vigean's and Fordoun, are written in Latin letters of the Insular variety[11]; and Pictish inscriptions in Ogams, presumably notes of ownership but not following the ' x maqq y ' formula, occur on two portable objects (bone handles), one from South Uist and one from Orkney.[12] Taken all together, these facts seem to provide a satisfactory framework for the discovery, in Pictish territory, of a piece of jewellery inscribed with Pictish names arranged in a Celtic ownership-formula, translated into Latin and written in Insular letters. Professor Jackson's interpretation is probably the right one.

Another kind of interpretation is just possible. Here the first of the seriously doubtful letters may be read either as *f* or as *k*; the second must be read as *b*, not as *u*. First, we may begin by reading *Resadf(k)ilis* or *Resad*, F(*k*)*ilis*: one or two names, still presumably Pictish. The rest may be read as *pb. s. sc. io.*, which may be expanded as *presbyteri* (or *presbyterorum*) *servi* (or *servorum*) *Sancti Iohannis*, meaning ' [The property of] R. (*or* of R. and K.), priest(s), servant(s) of St John '. A second possibility is *Res Adf(k)ilis* . . ., meaning ' The thing [*i.e.* property] of Adkil. . . .' A number of objections can be raised. Against the second suggestion is the fact that *res* seems not to have been used in that sense in the Middle Ages. Against both suggestions is the need to read *b* instead of the rather more likely *u*. On the other hand, if *d.s.* on the *recto* is accepted to mean *Dei summi*, then there can be no great objection, individually, to any of the supposed abbreviations on the *verso*, where the space was no less confined.[13] The phrase *servus Sancti Iohannis* seems a perfectly possible description of a priest who belonged to a church or monastery dedicated to St John. From the time of St Gregory the Great onwards popes, bishops and abbots described themselves as *servus servorum Dei*; Pope John VII (A.D. 705–7) described himself as *beate Dei genetricis servus*[14]; the author of the Life of St Margaret, Queen of Scotland, composed between 1100 and 1107, who was probably Turgot, Prior of Durham, described himself as *servus servorum Sancti Cuthberti*.[15] In the Celtic church ' dedications were not usual, but they were not unknown '.[16] In the parts of Scotland evangelized by the Celtic church, including Shetland, some dedications to St John (either the Baptist or the Evangelist) seem to have existed, but their date is uncertain.[17] By the middle of the 8th century two churches in England had been dedicated to St John the Baptist.[18] In 710 (?) Nechtan, King of the

[9] Kenneth Jackson, ' The Pictish Language ', in *The Problem of the Picts* (ed. F. T. Wainwright), 1955, pp. 140–1.

[10] R. A. S. Macalister, ' The Inscriptions and Language of the Picts ', in *Essays and Studies presented to Professor Eoin MacNeill* (ed. J. Ryan), 1940, pp. 202–6, Nos. 8–9.

[11] Macalister, *Inscriptions and Language*, pp. 194, 198, Nos. 4, 6.

[12] Macalister, *Inscriptions and Language*, pp. 218–9, Nos. 21–2.

[13] For pb. = presbyter see Traube, *Nomina Sacra*, p. 262; Lindsay, *Notae Latinae*, pp. 436–7. Capricious abbreviations like s. = servus are common even in MSS. where a formula was well-known or space was short; see Lindsay, pp. 415–7. Sc. for sci. is no worse than D. for Di.; see Traube, pp. 194–7 and E. Hübner, *Inscriptiones Hispaniae Christianae*, 1871, No. 90. Io. = Iohannes can be found in the marginal Eusebian apparatus of any Gospel-book.

[14] *Dictionnaire d'Archéologie Chrétienne*, fasc. 168–9 (1950), cols. 1360–1, quoting De Rossi and Grisar.

[15] *BHL, No.* 5325; *Acta SS.*, June, vol. ii, 3rd edn., pp. 324–31.

[16] J. Ryan, *Irish Monasticism*, 1931, pp. 288–9.

[17] J. M. Mackinlay, *Ancient Church Dedications in Scotland*, pt. i, 1910, pp. 278, 280.

[18] W. Levison, *England and the Continent in the Eighth Century*, 1946, pp. 36, 263.

Picts, received the famous letter from Ceolfrith, Abbot of Wearmouth and Jarrow, and placed his kingdom under the *patrocinium* of St Peter. The Roman Easter and the Roman tonsure were adopted at the same time, and the way may henceforth have been open to the Roman practice of formal dedication with relics.[19]

This second kind of interpretation raises many problems and lacks the admirable simplicity of Professor Jackson's. Each of the abbreviations involved is individually more or less justifiable, but as a group they would have puzzled an 8th-century reader as much as they puzzle us, and the facts which I have used as a background are admittedly all too far-fetched. A really sound alternative to *Resad fili Spusscio* will be hard to find.

Two points remain. First, if the object really is a chape, then Professor Jackson's interpretation, in which the owner may be a layman, is obviously better than any interpretation involving a priest or monk. A layman's sword or scabbard could conceivably have been inscribed *in nomine Dei summi*, although no other example seems to be known from the early Middle Ages. If the object is some piece of private or ecclesiastical jewellery not connected with a sword, either interpretation is possible. Pious sentiments and the names of owners were not uncommonly inscribed on rings and brooches in Merovingian Gaul, and examples of the same practice on rings have been found in England.[20] If the second interpretation is right and the object belonged to a priest, it cannot be a chape.

Secondly, the contrast between the sophisticated majuscule style of the *recto* and the every-day minuscule style of the *verso* indicates that the object was produced and used in a centre or centres where the full range of Insular handwriting, from the most formal to the most cursive, was known and used. The wording and style of the inscription on the *recto*, which was probably on the object from the first, suggests that the excellent workshop which produced it was situated near, or even in, an ecclesiastical establishment of some importance. If the inscriptions were written by Celts for Picts, say at Iona, which produced the Schaffhausen Life of St Columba before 713 (Lowe, *CLA*, vii, No. 998) and may have produced the Book of Kells *c.* 800 or before, there is no call to be surprised by the background of scribal skill which they presuppose. But if they were written by Picts, then they add something to our knowledge of Latin learning in the Pictish kingdom. The inscribed stones referred to above (p. 253) show that the Insular majuscule alphabet was known there, but the inscription on the *verso* of our object seems to be the only tangible evidence for a knowledge of minuscule, the hand of letters and charters, of the scholar and the chronicler. It has been suggested that the two families of Pictish king-lists had a common source (down to Nechtan, *c.* 706–724), which was probably written, and probably dates from the early 8th century.[21] King Nechtan's adoption of the Roman Easter in 710 (?) must have meant a lot of work for the scribes of his kingdom: ' statim namque iusso puplico mittebantur ad transcribendum, discendum, observandum, per universas Pictorum provincias circuli paschae decennovenales, oblitteratis per omnia erroneis LXXX et IIII annorum circulis ' (Bede, *loc. cit.*). However, the challenge of transcribing new Paschal tables may have been met in Pictland *c.* 710, our inscriptions (if written by Picts) show that by the end of the 8th century, at the latest, Pictish scribes had little to learn about Insular handwriting, whether from Iona in the West or from Northumbria in the South.

[19] Bede, *Historia Ecclesiastica*, bk. V, ch. xxi (ed. Plummer, i, p. 346; ii, p. 335); Haddan and Stubbs, *Councils*, vol. ii, p. 114.

[20] E. Le Blant, *L'Epigraphie Chrétienne en Gaule*, 1890, pp. 37–40; Le Blant, *Nouveau Recueil*, 1892, No. 80, a ring inscribed *In Di. numine A(men)*. E. Hübner, *Inscriptiones Britanniae Christianae*, 1876, Nos. 222–3, 224–5.

[21] Marjorie O. Anderson, ' The Lists of the Kings: II, Kings of the Picts ', *Scot. Hist. Rev.* xlix (1950), pp. 18–22.

In conclusion I should like to thank the many friends and colleagues who have been kind enough to discuss the inscriptions with me. I am particularly indebted to Professor Kenneth Jackson, who communicated his views on the inscriptions to the Department of British and Medieval Antiquities in a letter to Mr David Wilson. Professor Margaret Deanesly, Professor E. A. Lowe, Mr Eric Stanley, Mr David Wilson and Professor Francis Wormald have been as helpful as they have been kindly. The use I have made of their suggestions, especially in the highly speculative paragraphs at the end of this paper, will perhaps distress them: the responsibility rests entirely with me.

T. J. B.

5. THE PENANNULAR BROOCHES: DISCUSSION

The twelve penannular brooches are all cast. Their upper surfaces, which are gilt except in one case (No. 21), bear relief decoration, largely linear interlace. They were complete with their pins when buried, and undamaged unless for the loss of some of the coloured glass insets. It will be seen that they link up with one another in details of design to such an extent as to make it reasonable to assign them to a single cultural area and phase.

The largest (No. 17) is very boldly designed and in many ways different from any previously known. The triangular terminals are in the Hunterston Brooch tradition, but the outermost points project so that the whole is not circular but slightly pear-shaped. The inner points project correspondingly for symmetry. The deep strongly marked compartments are disposed to emphasize the corners. In the centre of them is a setting for a (lost glass) jewel from which there projects a cruciform arrangement of ridges; these are zoomorphic, each having as eyes a pair of tiny leaf-shaped projections with a central pin-prick. The width of the panels on the hoop resulted, owing to the chip-carving technique, in an irregular ridge up the centre of the pairs of running Stafford-knots, thus presenting a problem to the designer for which he tried several solutions, notably self-contained interlace knots on a smaller scale. Much of the pin has decayed, but it was probably like that of the other brooches, only more covered with interlace.

No. 18 has triangular terminals like those of the large brooch (No. 17). They are decorated with a small triangular setting from which pointed oval settings project to the corners, leaving panels of badly executed interlace round the sides. The hook is characteristic of most brooches in the hoard in having five lengthwise ribs of which two are corded or beaded.

No. 19, with square terminals, is a variant of two brooches found one in Antrim and the other in Norway. While these latter have a bird's head facing outward in each corner, leaving an Anglian-cross design round concentric circles and a central setting, the St Ninian's example replaces one bird's head by a setting and lets the bird's feathers run to the centre, disrupting the cross.

More or less recognizable birds' heads are present on five of the brooches (20–24), whose terminals are quatrefoil—four lobes round a disc. This time the heads face inwards, in the centre of three or four of the lobes and their beaks rest on the rim of the disc. There are differences of detail. The most elaborate (No. 20) has interlace on both the disc and the hoop. The birds' heads have been treated like the zoomorphs on the large brooch, and a further peculiar, indeed unique, feature is the projection from the two end lobes of a simple zoomorph seen in side-view, reminiscent of the dogs' heads on the inscribed chape. Three brooches have simple concentric circles on the disc. In No. 21, of poor quality, the birds' heads are almost unrecognizable. Nos. 22 and 23 have scrolls round the lobes on the terminals, a decorative feature that links them to the next group, Nos. 25–27. These also have quatrefoil terminals; scrolls outline the lobes, on three of which is a glass inset as in

the central disc. There is interlace on the disc and on the fourth lobe, and additionally on all the lobes in one case. This last has its outer lobes truncated as if by wear, but perhaps rather due to a casting defect. One terminal fragment found in Norway is related to these.

The twelfth brooch (No. 28) breaks away in one respect from the conventions of the others. Its terminals take the form of large animal heads glaring at one another, jaws closed but teeth bared. A beard and forelock, and curling nose-tip and ear, contrive to give them a rather rakish look.

On the vexed question of the origins of 7th- and 8th-century art styles the St Ninian's brooches can shed no immediate light as they must all be considerably later than the wonderful early examples from Hunterston and Dunbeath in Scotland, and the Tara brooch in Ireland. They may, however, help to decide the country of origin of the hoard itself, and even of some of the objects from Viking graves in Norway generally regarded as Irish, and so make it a little more possible to assess the part played in the development of ' Celtic ' art by various linguistically different kingdoms—Pictish, Scottish, British and Anglian, as well as Irish.

There were previously eighteen decorated brooches of 8th–9th-century date known from Scotland, two of them in very poor condition, and five only fragments.[22] So those from St Ninian's Isle almost double the score. Unlike some other parts of the hoard, unfortunately, their interest is more archaeological than artistic, for none are of the best quality and several patently poor. The best brooches at that time, large or small, normally included gold filigree in their decoration to some extent, as is shown by five of the eighteen. One of these, believed to have been found near Perth, has beaded ribs on the hoop and three good birds heads on minute lobes round discs that have scrolled edges, curiously truncated like St Ninian's No. 27. We may say that it is the same stage of evolution as the Shetland brooches, but of better quality. The same applies to the large brooch from Rogart in Sutherland, which carries birds' heads modelled in the round, four dipping their beaks into the circular ' dish ' on each terminal, and two into that on the cartouche like No. 23. It has no filigree and may be poor silver, but is good work. A small but perhaps significant feature is that the Rogart birds' heads bear the basketry pattern, rather unusual on such metalwork, seen behind the heads on the front of the inscribed chape. A smaller Rogart brooch has trefoil terminals and basketry along its pin, while the smallest has quatrefoils with pellets in lieu of heads.

Dr Raftery has described the square terminals found in Antrim and in a Viking grave of *c.* 830 in Norway, as a North Irish or Scotic variety on the rather distant analogy of Rogart. The St Ninian's series now provides the link, but we should rather call them all Pictish, for Sutherland, Shetland and Perthshire were all within that Kingdom. An unpublished fragment from Loch Ness adds to this distribution, though it is typologically a step farther from St Ninian's No. 21, since it has no birds' heads but just hollow crescents round a disc. Another in poor condition, but probably closer to No. 21, was found at the Brough of Birsay in Orkney. A quatrefoil brooch with concentric circles but no heads comes from Colonsay in the Inner Hebrides, one surmises from a Viking grave. The only example of a triangular terminal at all resembling St Ninian No. 18 again comes from the neighbourhood of Inverness, as part of the small Croy hoard. It is covered with gold filigree round a single roughly triangular setting. Along with it there were two other brooches, one at least more

[22] Most are brought together in *Viking Antiquities* II, V and VI (ed. H. Shetelig). Also see *Christian Art in Ancient Ireland,* I (ed. Mahr) and II (ed. Raftery).

evolved than those from St Ninian's Isle, having disc terminals held by a single zoomorphic lobe on the end of a plain hoop; two Anglo-Saxon coins give an approximate date, the latest struck by Aethelwulf of Wessex (839–58).[23] A ' dragon-head ' terminal, again probably rather more evolved than St Ninian's No. 28, was found at Freswick in Caithness, a Norse settlement site that has also yielded pins of pre-Norse type.

In addition to such contemporary and later varieties the Breadalbane Brooch in the British Museum should be noted. On Hunterston-type terminals it has a raised three-lobed rosette; perhaps a predecessor of the quatrefoil terminals, it is the only one of the finest brooches to have cording on the hoop, and in all likelihood it comes from Perthshire. Several Irish brooches belong to the same stage, but they and most 8th to 9th-century brooches found in Ireland have their terminals joined, so that they are pseudo-penannular, in contrast to all the brooches found in Scotland, except the one from Hunterston.

These parallels to the St Ninian's brooches have pointed to the two kernels of the Pictish Kingdom, as deduced from written records and from sculptured monuments round the Moray Firth in the north and Perthshire, with Angus, in the south. Such dating evidence as the penannular brooches provide does not conflict with the idea that the hoard was buried about A.D. 800.

R. B. K. S.

6. COMMENTS ON THE BOWLS AND MISCELLANEOUS SILVER, AND GENERAL CONCLUSIONS

Comments

The seven bowls are remarkably interesting. Except for the Ormside bowl, referred to below, which is technically and in other respects very different, no contemporary silver bowls are known. The unbroken curved profile of No. 1, with no flattening or countersinking of the base, is reminiscent of the ten shallow silver bowls from the Eastern Mediterranean found in the Sutton Hoo burial. Possibly, because of an apparent difference in the quality of the silver, the execution of the basic design in chased lines, instead of by means of punch-marks as in the other bowls, a geometrical design unmatched in the other bowls, the especially high level of delicate workmanship, and an absence of any distinctively Insular feature, this bowl may be an imported piece. Such an imported bowl could have given rise to local imitations, represented by the other bowls. Against this is the fact that the bowl is in mint condition. If of Eastern origin it must have come directly from the East into the hands of its last owner, for it had not been in use or circulation. Of the remaining bowls, those with animal ornament certainly, and probably the others, are all native work. The general dimensions and the countersinking of the base (a feature present in all except No. 5) are seen again in the hanging-bowl (No. 8), which is purely in the Insular tradition. The Ormside (Cumberland) bowl in the York Museum is probably contemporary with the St Ninian's Isle bowls, and this and the St Ninian's Isle hanging-bowl are clear evidence of the native manufacture of small silver bowls at this period. All the bowls, except No. 1, have their patterns executed in pointillé or reserved against pointillé grounds.

In spite of an identical general technique, a general similarity in bowl-form, and their association in the same hoard, the differences between No. 3 and No. 2 should be noted. The deep basal depression and rolled-out rim of No. 3 do not occur in No. 2. The hexafoil base pattern and the curious pattern below the rim of No. 3 (FIG. 3) strike a new note. The animal style also shows a striking difference. In No. 3 there are four pairs of animals interlocked back to back; lappets spring from the back of the head, and foliated tongues and tails

[23] *PSAS* 1949–50, 217.

appear as in No. 2. But the style in No. 3 is much more involved and grotesque and the creatures more stylized. Spiral joints (not seen in No. 2) are present, and in particular the treatment of the feet is different. The feeble legs and enlarged fore-parts of the bodies, the exaggerated bulge of the forehead, and the emergence of the lappet in some cases from the shoulder rather than the head in No. 3 give the animal ornament a much more mannered and evolved effect than that of No. 2. The background to the animals on No. 3 is much denser, the punch-marks being perhaps twice as numerous as in No. 2.

The hanging-bowl is a particularly interesting find. The importance of the seven other silver bowls lies in the fact that they are the first such bowls ever to be found on the mainland of Scotland, or its outer Isles, and indeed only one other silver bowl of the Saxon period survives in the British Isles (the Ormside Bowl).[24] They thus introduce, with a wide range of examples, a new class of antiquity. The hanging bowl, by contrast, is important as a late, intact and revealing example of a well-known existing class. Such an example must shed light on hanging-bowl problems and greatly extend our knowledge of the later history of the bowls. The St Ninian's Isle bowl is by far the most northerly occurrence of a hanging-bowl in the British Isles,[25] the next being represented by fragments of (much earlier) hanging-bowls from Tummel Bridge, in Perthshire, and Castle Tioram, Argyll, which date from the 5th century. It is the second silver hanging-bowl recorded out of 146 known bowls, and the only silver hanging-bowl to survive.[26] It differs from all other hanging-bowls in the form of its escutcheons. The St Ninian's hanging-bowl can be confidently placed in the 8th century and it is noteworthy that millefiori enamels, which are so conspicuous a feature of the lost Witham bowl (the only other silver example), which also ranks as an 8th- to 9th-century piece, and of the late hanging-bowls found in Viking graves, are absent. It is interesting to find quite unchanged at this late date, as apparently also in the Witham bowl, the highly characteristic profile and rim-form of the ' Group B ' bowls found in pagan Saxon graves of the 6th or 7th centuries, and to see that there is no tendency at all in the direction of the vertical side and rim rolled-out round a strengthening wire characteristic of the latest method of bowls recognized by Dr Françoise Henry. Yet this method of treating the rim is to be seen in two of the bowls in the St Ninian's Isle group (Nos. 3 and 4). It is again interesting to note the general absence from the silver hanging-bowl of the blue glass and other coloured inlays profusely used on both the Ormside and Witham bowls, and also of the plastic, full-round animal-style represented in the Witham bowl. The riveting-on of the escutcheons is, again, a feature seldom found in the earlier bowls, whose escutcheons are usually soldered on.

The Spoon and Pronged Implement

Between the series of perforated ritual spoons in 6th-century ' Jutish ' graves and the Norman period, spoons are excessively rare objects.

The St Ninian's Isle example is the only spoon in the British Isles datable to the 8th century. It cannot be fully compared with the Sevington (Wilts.) spoon[27] (dated with some exactness to *c.* A.D. 880) because the latter is unfinished. Compared with Norman period or

[24] Baldwin Brown, *The Arts in Early England*, Vol. v, pp. 318–28.

[25] Hanging-bowls taken from the British Isles as Viking loot are, of course, found in Norway.

[26] The other, found in the R. Witham, Lincolnshire, was last seen at the Leeds Exhibition in 1864. It was published by Sir Thomas Kendrick in 1941 (*Antiquaries Journal* XXI, pp. 161–2) from drawings in the Society of Antiquaries Scrap Books. The figure of 146 is the result of a current survey of the subject being made in the British Museum.

[27] British Museum, *Guide to Anglo-Saxon Antiquities*, Fig. 130. G. E. P. and J. P. How, *English and Scottish Silver Spoons*, Vol. I, 1952, pl. 3.

later spoons, the St Ninian's spoon has various distinctive features. It was intended for suspension, as was also the composite pronged implement. The bowl does not develop, as is regular in all early medieval spoons, out of the mouth of a flattened animal head modelled at its junction with the stem; the animal head is in this case a separate casting mounted above the bowl and is fully in the round with its tongue licking the interior of the bowl. The bowl as seen in profile (PLATE XXXI (*b*)) never drops below the line of the handle, but sweeps uniquely upwards from the stem in an unbroken line. The bowl is very shallow and also narrow and has very little capacity for containing liquid. Nor has it strength for cutting or manipulating solid food, for the metal is thin, and there is no ' rat's tail ' or other reinforcement. In these respects it foreshadows the Iona spoon,[28] which is attributed to the period 1150–1250, the profiles of the bowl in the two cases being very similar, apart from the normal downward drop of the Iona bowl below the animal's head.

No parallel to the single-pronged composite implement is known. With the Sevington spoon was an orthodox fork with two straight prongs. One of the unfinished Sevington implements, perhaps both of them, were composite, but in this case it is a combination of fork with spoon, rather than knife or cutting edge with fork or pick. The St Ninian's implement would not seem very practical as a lobster-pick (which has been suggested) because of the curve of the prong and the projecting cutting-edge. It is difficult to visualize the tiny cutting-edge being employed in a scriptorium for ruling vellum, for which it might appear suitable, since the curving prong gets in the way and makes it difficult to bring the cutting-edge to bear in any direction except locally and more or less vertically from above. The implement seems to be a highly specialized form, whether its use was secular or ecclesiastical. Its use may have some relation to that of the spoon, since they were found together, and both were designed for suspension. They are, however, different in method of construction, the one being cast and the other wrought out of a flat strip. They were not made as a pair, even if they may have been used together. There are difficulties in the way of regarding them as ecclesiastical in character. The nature of the hoard as a whole, having secular objects, such as the sword pommel and chapes and brooches, and lacking chalice or paten, comes into question. This is discussed later. However, I am inclined to think that both implements may have had a definite liturgical use. The cutting-blade of the pronged implement must have been used, not with any sawing or slicing action, but by pressure, applied to the flat back of the blade, for dissecting or dividing up something relatively small; and the prong suggests that fragments so obtained were then picked up individually. This method of use is suggested by the character of the implement itself. At the back of the Stowe Missal, in the library of the Royal Irish Academy, is a short treatise on the Mass in Old Irish [29] which is earlier than the 9th century and probably contemporary with the St Ninian's hoard. This gives elaborate rules for the division of the host. Seven hosts were divided, at least on the major feasts, into sixty-five particles. This took place on the altar.[30] Some form of implement must have been used for the dissection and the picking up of the individual fragments, and it seems that the pronged implement in the St Ninian's Isle hoard might serve this purpose ideally. This would of course depend upon the size and

[28] How, *op. cit.*, pl. 2. (in the National Museum of Antiquities, Edinburgh).

[29] Published by Whitley Stokes with a translation in 1882 and reprinted by him in *Thesaurus Palaeohibernicus* II (1903), pp. 252–3. For full bibliography see Kenney, *Sources for Early Irish History* (1929), pp. 692–9. This information and that which follows with regard to the ritual of *confractio panis* in the Gallican liturgy has been supplied by the Rev. Prof. John Ryan, S. J., and I am indebted to the Rev. Aubrey Gwynne, S. J., and Mrs G. Keiller for acting as intermediaries in the matter.

[30] The rite is still in use in the Byzantine (Russian) rite and it is possible that an instrument for this purpose is still in use. Further research on the subject is required.

character of the host in use. The bowl of the spoon seems too flat and shallow for it to have been used for the wine, but it could have served for picking up solids such as portions of the host: alternatively, it might be capable of holding a small quantity of oil. An interesting analogy to the pronged implement is presented by a bronze object in the National Museum, Dublin [31]—a small baluster-moulded bronze implement with a suspension ring at the end of the handle, and a single hook or prong: a slight spur or bud on the edge of the expanded circular area at the base of the prong is analogous to the cutting projection on the St Ninian's implement, although it is scarcely more than an interruption of the profile and seems hardly functional. Unfortunately the object is unprovenanced.

The Sword-pommel

The ornamental fields on the pommel are all packed with tight, involved, all-over animal ornament (FIG. 6). The designs of the panels as seen in FIG. 6 (*b*), (*c*), are closely repeated on the other side of the pommel. The style of ornament has affinities with the Lindisfarne style in its totally zoomorphic content and its all-over distribution. The occasional appearance of a spiral joint on the animal's thigh and the ' ball and claw ' form of the foot also match the Lindisfarne style. However, the style of the St Ninian's pommel is more evolved. The speckling of the body seen here, a constant feature of 9th-century animal ornament, is not a feature of the MSS. and metalwork of the Lindisfarne Gospels, Tara Brooch and Ardagh Chalice period (end of the 7th, early 8th century). The ornament is beautifully designed and executed in a chip-carving technique, and the whole was originally heavily gilded. Another detail later in horizon than the Lindisfarne period is the frontally turned head seen in the uppermost animals of the fields at either end (FIG. 6 (*a*)). All the exposed parts of the pommel are extensively worn. The pommel stands alone, no portion of the quillons being preserved; but a loose silver nail or shank, bent at one end, 1·15 in. long, was inside the pommel, and presumably was part of the construction of the handle or attachment of the pommel.

The only sword pommel of this period from Scotland is very different both in shape and ornamentation, a relatively long, low pommel inlaid with amber or enamel and with other settings, the interspaces filled with unimpressive scraps of interlace, found at Culbin Sands and published in *PSAS*, LXVII, pp. 33–4. The St Ninian's pommel is thus a rare and important piece.

The Three Cones

No parallel is known for these objects. The wear on the sides of the basal slots (cf. PLATE XXXII (*e*), (*g*)) would appear to indicate that they were mounted on a strap, the width of which would be about 5 mm. The transverse tubes which perforate the cones (PLATE XXXI (*e*), (*i*), (*j*)) were on the same alignment as this strap. A lace of some sort was presumably threaded through these transverse tubes. The sides of the cones show considerable wear below the holes at either side. The ornament at the sides of the cones on a line at right angles to that of the transverse tubes is not worn, but the beaded wire ring on the rim of the base plate at these points is—whereas it is not worn below the holes marking the ends of the transverse tubes. If this observation is sound, it perhaps suggests two cords running through the tube, knotted at either end below the hole, and then carried off to either side and running off the edge of the base half-way round, where the beaded ring is worn. The cones may have some connection with the sword, and might have been mounted on the baldric or scabbard. Wherever they were they received very extensive handling, and may

[31] A. Mahr and J. Raftery, *Christian Art in Ancient Ireland*, Vol. 1, pl. 41, no. 5.

have had a functional role, perhaps in connection with scabbard straps or sword knot. There is no actual evidence to associate them with the sword; but the presence of the pommel and chapes (next described), a general similarity of gilding, ornamental style and wear to the pommel, and analogies of the kind cited in the footnote,[32] make this a reasonable suggestion.

A slight difference in shape, a difference in ornamental theme, a greater degree of general wear, and the different shape of its basal slots seem to indicate that No. 14 originally belonged to a different and somewhat earlier equipment.

The ' chapes '

These two objects are unparalleled in the archaeology of their period. There is no doubt that, in spite of differences, they performed the same function. They are certainly not handles. The open animal-mouths and inner edge indicate that they were meant to be fitted on to something in the manner of a finial; stole-weights and strap-ends have been suggested, but I know of no evidence for stole-weights, and no strap-end of this form is known. It seems that they are chapes designed to terminate the scabbard of a sword or long knife. There are two difficulties in the way of this identification: the narrowness of the slots along the inner edges of the objects, and any reading of the inscription on No. 15 which would suggest ecclesiastical ownership (p. 253). In the case of No. 15 (PLATE XXXII (*i*), (*j*)) the slot is quite wide enough (5 mm.), perhaps not to accommodate the end of the scabbard so much as to grip a fringe of leather or cloth at the edges of the sheath. The narrow (2 mm.) opening of No. 15 is more difficult. There is further difficulty, but this would apply equally to mounting on any object. The only device for attachment in the case of No. 15 is the two small holes at the tip. Even these are lacking in No. 16. In this case it is possible that they were not yet drilled, for the mint condition and ungilded state of the object opens the possibility that the work was not quite finished. Another possible explanation arises from the fact that the chapes are made in two separated halves fitted together by inconspicuous rivets. It is possible that the two halves were riveted together in position on the scabbard under pressure, and that the fringe of the scabbard was thus tightly gripped by the chape. This would imply that No. 16 (in which the two halves are joined) had in fact been finished and affixed to a scabbard from which it must have been pulled off. Such a method of attachment would perhaps render any riveting of the chape to the scabbard unnecessary, and it should be noted that the openwork of teeth and tongue might enable the chape to be made more secure by stitching or tying.

The chape identification gains support from the occurrence of a chape of very similar form amongst the weapons from the well-known 4th- to 5th-century Thorsbjerg bog-finds now in the Museum at Schleswig, and from the presence of a sword pommel (No. 11) in the St. Ninian's hoard. The wear on No. 15, the inscribed chape, matches that on the pommel and on the three conical mounts; the quality of metal and gilding appears similar and the animal heads on the back of the ' crest ' of No. 15 (PLATE XXXII (*i*) are virtually identical with those on the pommel (FIG. 6 (*d*)). The pieces remain somewhat puzzling and they cannot yet be identified as chapes with certainty.

[32] Elaborate gold and garnet bosses were mounted on the scabbard of the Sutton Hoo sword, and a sword from the Rhineland of 7th-century date had three pyramidal studs of diminishing size mounted in line down the length of the scabbard, near its mouth. These cones might be greatly elaborated descendants of such studs, but would appear too big to sit very happily on a scabbard.

General Conclusions

A final, full appraisal of the St Ninian's Isle silver hoard will only be possible after considerable further research and in the light of future discoveries. We can say now that, by any standards, it is a highly remarkable find. Mr Stevenson has called it ' the most important single discovery in Scottish archaeology'. It contains seven bowls and three conical objects of types hitherto unknown; the finest sword pommel of its period, and only the second to be found in Scotland; the only complete hanging-bowl datable to the 8th century (although some of the escutcheons found in Norway can be attributed to this period); the only hanging-bowl to survive from any century in silver, the latest example of its type (Type C, as classified by Dr F. Henry, on the basis of profile and rim-section) and by far the most northerly occurrence in the British Isles; and two unparalleled chapes, one carrying an important inscription. As Mr Stevenson points out (p. 256) it nearly doubles at a stroke the number of penannular brooches of the 8th or 9th centuries found in Scotland. It includes the only native spoon (i.e. not including the two Byzantine imports at Sutton Hoo) between the 6th-century sub-Roman type with perforated bowls found with crystal balls in Germanic (chiefly Kentish) graves, and the mid-9th-century Sevington spoons already referred to (p. 258) (early medieval spoons are in any case excessively rare); and it also contains that unique one-pronged composite implement. The only orthodox object in the hoard, apart from the penannular brooches, is the porpoise bone (No. 29). Even this is orthodox only in being like every other porpoise jaw, but is unique as a constituent of a hoard. All this highly unusual, rich, interesting silver has come to light in the extreme north, where one would not have expected wealth or any special cultural interest in the 8th century, certainly not what is probably, apart from Sutton Hoo, the most interesting single assemblage of Dark Age metalwork found in the British Isles. Such a discovery serves to remind us of what we do not know, of the chronic incompleteness of the surviving evidence and of the danger of generalization.

The constituent pieces of the hoard were made over some appreciable period of time. The sword-pommel, the three conical mountings and the chape that carries the inscriptions are all very heavily worn, the conical mountings almost to the point of being discarded. The original escutcheon under the base of the hanging-bowl had been lost and replaced by the sheet of stamped silver foil, itself already somewhat flattened and erased when it was used for this purpose. One of the seven bowls (No. 6) had been fitted with a secondary escutcheon taken from some other piece of metalwork. All these items must have been of some age when the hoard was buried. On the other hand, the bowl with the basal cross (No. 1) (PL. XXV) and the second (uninscribed) chape (No. 16) (PL. XXXII, (*i*) (*j*)) are in mint condition. Furthermore, this chape, which had never been gilded and lacks the small rivet-holes for attachment that appear in the first chape (No. 15), seems to be in an unfinished state. It is formally much more evolved than the worn chape, and the flamboyance of its animal ornament (FIG. 8 (*b*)) is far advanced from the aura of the Lindisfarne style, sober and tortuous by comparison, that still hangs over the animals of the sword pommel and the conical mounts. This chape is, undoubtedly, the latest piece in the hoard; and by it, were it datable, the date of deposition would be fixed. The earliest piece in the hoard may be the thin repoussé disc used secondarily under the base of the hanging-bowl (PLATE XXX (*b*)). It carries a trumpet-pattern design, with a double contour to the trumpets, closer to passages of trumpet-pattern on ff. 3 *r* (in the O of NOVUM) and 139 *r* (in the Q of QUONIAM) and also to the rectangles of such pattern of f. 94 *v*, of the Lindisfarne Gospels (c. A.D. 698) than to the trumpet-designs of the hanging-bowls from 7th-century pagan Saxon graves,

or of the Book of Durrow. The outside range covered by the hoard might be the hundred years A.D. 700–800. This upper limit is offered chiefly because the Viking raids on the north of the British Isles that began with attacks on Lindisfarne (793), Jarrow (794), the Isle of Man (798) and Iona (802 and 806) provide an obvious context for the hiding of such a hoard under the floor of a church in (so far as we know) previously peaceable Shetland. But there may have been earlier unrecorded raids. Brøgger estimated that the permanent Norse occupation of Shetland began about 780.[33] The historical background thus does not provide a secure *terminus ante quem* for the burial of the hoard. Falling back on the internal evidence, the date of burial of a hoard is fixed by the latest object in it, in this case, from its unfinished and mint condition and advanced form and ornamental style, the uninscribed chape; and a date towards the end of the 8th century, or perhaps early in the 9th, seems obligatory for this. All things considered, the date of about A.D. 800 may be suggested for the deposition of the hoard, or perhaps (since the uninscribed chape, in spite of its advanced style, seems to be closely related to the hanging-bowl in some respects, and to some other items in the hoard which in themselves would suggest an eight-century date)—one slightly earlier than 800.

The animal-style of the sword pommel (and to some extent of the bowl No. 3) shows a predilection for presenting the hind-quarters and back-legs by themselves (FIG. 6, (*a*), (*d*)). In the case of the sword pommel the hind-quarters are crisply rounded and stylized, the back legs straightened together, with clearly marked ball and claw. The body is turned into a narrow ribbon which circles around the hind-quarters and then wanders off. The hind-quarters generally shows a thin tail. This method of treating the hind-quarters is quite unusual, and in the pommel it is executed with élan. An exact analogy occurs in the Durham Cassidorus (FIG. 10)—a Northumbrian MS. dated by Lowe ' Saec. viii med.'[34] but which could be as early as *c.* 720.[35]

Another parallel that may be drawn is between the three long escutcheons of the hanging-bowl and an object found at the other end of the British Isles, the Steeple Bumpstead boss in the British Museum, which was probably dug up from the soil of the churchyard of that parish in Essex.[36] This is a very well-known piece of metalwork in the Celtic manner, decorated with zones of interlacing animals and of spiral coils with ragged interior terminals. The boss is roughly hemispherical and on its curved surface, dividing the boss into equal fields, sit four long, hollow-cast relief figures (FIG. 11) of spreadeagled animals somewhat akin to the boars of the escutcheons of the hanging-bowl. (They are heavily worn, and the drawing slurs over some of the original detail.) The Steeple Bumpstead animals crouch, with bent legs lying close against the flanks, and are vaguely frog-like and do not bear much zoological resemblance to the boars' bodies of the St Ninian's hanging-bowl; but the concept of the quadruped flattened out and seen from above is rare and not encountered in the metalwork or manuscripts of the Lindisfarne or earlier periods. In this case the parallel is made more significant by the presence on the Steeple Bumpstead animals of fine engraved

[33] *Ancient Emigrants*, p. 5.

[34] E. A. Lowe, *Codices Latini Antiquiores*, Vol. II, no. 152.

[35] Palaeographical dates at this period are generally liable to a fair margin of error. In *Codices Latini Antiquiores*, VI (p. x) Lowe revises some of the datings given in *C.L.A.* II, bringing the Book of Durrow from ' Saec viii ' to Saec vii^2, to agree with conclusions derived from its decoration. Durham MS. A. ii 10 he moves back from ' Saec. viii ' to ' Saec vii med.' The Durham Cassidorus would not seem to require so late a dating as *c.* 750 to judge from its ornamentation, since the Lindisfarne Gospels may now be dated as early as *c.* 698. (*Codex Lindisfarnensis*, Vol. II, 1960.)

[36] *Proceedings of the Society of Antiquaries*, XXVIII, 1915–6, p. 93, fig. 5.

Fig. 10. Decoration from the Durham Cassiodorus. See p. 263. Scale 1/1.

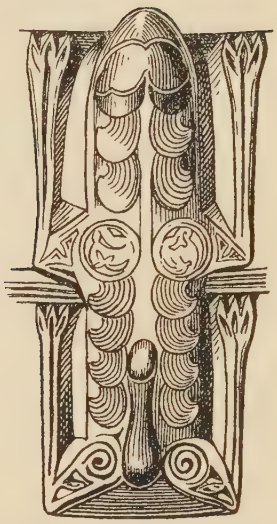


Fig. 11. Detail from the Steeple Bumpstead boss. See p. 263. Scale 2/1.

details and especially of locks of hair in engraved lines parted to either side of the backbone and neck (FIG. 11; cf. FIG. 4 (*a*), (*b*)).

The most interesting parallel, however, is with the Monymusk Reliquary or Brecbennoch of St Columba in the National Museum of Antiquities in Edinburgh, a parallel which, taken all round, seems to me sufficiently strong to suggest that the two bowls with zoomorphic decoration may have come from the same workshops as the reliquary and thus to give some kind of focus to the hoard as a whole.[37] On the front and front slope of the lid of the Monumusk reliquary are silver plates carrying unusual animal ornament similar to that on the silver bowl (No. 3). Firstly, there is a technical similarity: in both, the animals are delineated on the silver as flat, reserved shapes seen against a background dotted with punch-marks. Secondly, the general scale and layout of the ornament, with dense small-scale punch-markings, the relative weight of the bodies and of the space-filling interlaces that develop from lappets and tails, is closely similar. The small, straight legs with spiral joints and ball-and-claw feet are a striking detail which the two pieces share. The animal ornament of the Monymusk reliquary has never been properly drawn or fully discussed. The most realistic renderings are of two details (FIG. 12 (*a*), (*b*)) drawn by Mr Stevenson in FIG. 16 (p. 109) Nos. 5 and 6 of his chapter on Pictish Art in *The Problem of the Picts* (Nelson, 1955). The general effect is, however, given by the colour-plate, pl. VI (p. 434) in *PSAS*, LXVIII. A mannerism found in both the reliquary and the bowl is the flattening or squaring of the backs of the curved animals. The Monymusk reliquary also carries bronze appliqués with red enamel insets and inner panels of gilt interlace very

[37] See J. Anderson, ' The Architecturally Shaped Shrines and other Reliquaries of the Early Celtic Church in Scotland and Ireland, in *PSAS.* XLIV, 1909–10; and *PSAS.* LXVIII, 1933–4, pp. 433–8. Mr Stevenson, however, would put the reliquary 100 years earlier than the bowls.

similar to that mounted in bowl No. 5 of the St Ninian's treasure (PL XXXII (*d*)). Finally we may note that the hinged red-enamelled bronze plate that survives at one end of the Monymusk reliquary carries a geometrical curvilinear pattern of three half-peltae arranged around a centre which is analogous to the pattern of the silver disc under the base of the St Ninian's hanging bowl. The style is different, but both are concentrically arranged designs of the same general scale, arrangement and open manner. There are of course plenty of parallels for this type of design. The Monymusk reliquary, however, seems to combine three features seen in the St Ninian's hoard—the technique and manner of the animal ornament of the bowls, the type of the bronze-gilt and enamelled appliqué found in bowl No. 5; and the general scale and open character of the concentric Celtic curvilinear pattern.

Fig. 12. Ornament on the Monymusk Reliquary. See pp. 264-5. Scale 1/1.

The curious ' tree-pattern ' that forms the upper border of the design of bowl No. 3 (FIG. 3) is highly unusual. It occurs, however, in the Corpus Christi College, Cambridge, Gospels of St Augustine (MS 286) round the top of the arch which frames the seated figure of St Luke.[38] This is an Italian 6th-century book that could have been brought to England by St Augustine in 597 [39] and this detail on bowl No. 3 may be regarded as one of those Mediterranean elements absorbed with little change into Insular art with the introduction of Italian codices into Northumbria in the late 7th century.

The animals of bowl No. 2 (FIG. 2) descend in a general way from such creatures as the hounds of the linked pair executed in red dots on f. 95 *r* of the Lindisfarne Gospels (FIG. 13); the behaviour of the neck and leg of the left-hand animal on Fig. 2 may be compared with that of FIG. 13 while the inverted hind-quarters occur in similar form on one animal in the two upper zoomorphic panels on the opposite page of the Gospels, f. 94 *v* (FIG. 14). The foliations of the tips of tails or tongues in the bowls are a post-Lindisfarne innovation.

The nature of the hoard as a whole is something of a puzzle. It seems too heterogeneous; in the case of the penannular brooches, too repetitive; and probably, in this remote Shetland context, too rich to have been the normal property of one individual. The extreme wear of some of the pieces and the mint condition of others might suggest a wandering silver-

[38] MS. CCCC 286. F. Wormald *The Miniatures in the Gospels of St. Augustine*, pls. II and VII, O.U.P., 1954.
[39] Lowe, *CLA* II, No. 126.

Fig. 13. Hound from the Lindisfarne Gospels. *See p. 265.*

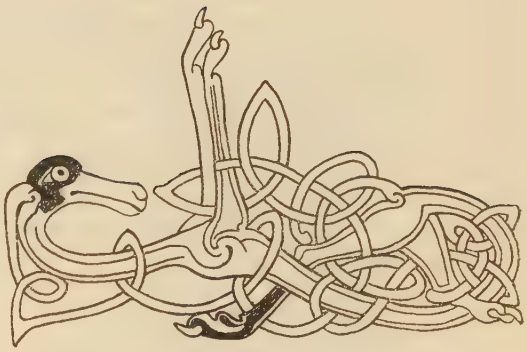


Fig. 14. Animal from the Lindisfarne Gospels. *See p. 265.*

smith's or moneyer's stock in trade; but the absence of scrap, ingots, moulds, or coins, makes such a conclusion unjustifiable—nor does it explain the majority of the intermediate pieces—neither conspicuously new nor conspicuously old. Since the hoard was probably buried under the floor of a contemporary church (i.e. an early foundation preceding the 12th-century church on the same site) and covered with a slab carved with a cross, it would be natural to think that it might be ecclesiastical property. As we have seen, the spoon and pick with cutter may have had a liturgical use. One bowl (No. 1) carries a deliberately emphasized cross under the base (PL. XXV (*b*)). Hanging-bowls are generally regarded as something to do with the furniture of a Celtic church, whether sanctuary lamps, lamp-reflectors, holy water stoups, or basins used in the liturgical washing of the hands. The St Ninian's Isle hanging-bowl may be the only one to have been found in a Celtic context whole, unlooted, and in the place where it was used. The most important object in the hoard from the point of view of establishing its ecclesiastical character is the porpoise bone. Since this was deliberately buried with the silver treasure (p. 243), it must have been regarded as an important relic. But the hoard is not church plate in any normal sense. For one thing, where are the chalice and paten ? The penannular brooches are secular; and the pommel, one chape and three conical mountings seem to belong to a sword, and the second chape to a second sword, though in both cases detached before burial. There were no remains of any actual sword found with the silver. The signs of Christianity in the pagan-style Sutton Hoo ship-burial—including the spoons with Saul and Paul in Greek, and the cross-bearing silver bowls and the large hanging-bowl with the fish on a pedestal and two smaller ones—show that it is unwise to regard such traces of Christian usage as occur in the St Ninian's Isle hoard as giving it a specifically ecclesiastical character. The burial of the hoard under the floor of a church (and it has yet to be shown that an earlier church in fact lies under the medieval one) might only have been for the sake of such protection as the holy place could confer on it. At this point, however, the inscription (p. 251) becomes relevant. If this is read to mean that the chape was the property of Resadkil, priest of the servants of St John, it becomes necessary to query whether these objects are indeed sword chapes, or to find some explanation of why a priest should own an elaborately embellished sword. From this point of view the reading with two Pictish names would be preferable.

Two possible explanations of the hoard, firstly, that it represents the personal wealth of various members of the small community which, we may suppose, was served by the church (if church there was at this spot, and the enclosure with contemporary standing stones makes it very probable), who handed them in to the priest for burial and protection. Or, secondly, and perhaps more likely, that it represents the movable wealth of the church in the form of gifts received. The church may have contained a shrine or relic which attracted visitors and led to the gift to the foundation of a certain amount of miscellaneous treasure, which the priest buried in a time of acute danger. Perhaps the chalice and paten, required for daily use, were kept separately. Perhaps they were separately buried; or else captured by the raiders whose attack led to the burial of the hoard and must have been effective enough to wipe out the knowledge that would have led to its recovery after the raid. The solution depends upon the answers to other questions. What community did the 8th-century church, if church there was, serve ? Was it a village, or a monastic site ? Are there the remains of other buildings around ? Will they yield evidence of the nature of the community, and of the destruction of the site ? The standing stones bearing the sea-horses in the nearby enclosure are provisionally dated by Mr Stevenson to the 9th century. If this were correct it would imply a fairly rapid reoccupation of the site after the events which led to the burial of the hoard. Mr Radford, on the other hand is inclined to date the stones *c.* 800, and if so they were probably standing when the community was attacked and the hoard lost, and need suggest no subsequent reoccupation. What, if any, is the stratigraphical relationship of this enclosure to the 8th-century church, if there was one ?

Here we are face to face with the fundamental problem which the St Ninian's Isle hoard sets. It has been generally accepted in published works that Shetland was virtually uninhabited when the Norse arrived, or at least that it was no longer occupied by any organised power.[40]

Was there after all a Celtic community in Shetland in the immediately pre-Viking phase, sufficiently organized and wealthy to own or, to have collected, or to manufacture, such a treasure ? Were there monasteries in Shetland at this period ? Documentary sources only speak of hermits.[41] If the Pictish stones in the ' founders tomb ' are 9th century, as Mr Stevenson suggests, did Celtic inhabitants continue to live alongside the Norse settlers, as this might seem to imply ? For the archaeological evidence is thought by Mr Hamilton to suggest that Norse settlers had established themselves at Jarlshof not very far from St Ninian's Isle, by about 800 A.D.[42] Was any or all of the varied material in the St Ninian's Isle hoard made in Shetland or in normal circulation in Shetland ? Two of the pieces are in mint condition, one perhaps unfinished. The assemblage looks as though much of it could have been accumulated by Norsemen looting in the South. If so, one would have to visualize it as having been captured from the Norsemen when they attempted to raid Shetland on the way home to Norway, and then buried by the Shetlanders when a second lot of marauders arrived, or the first lot returned. The style of the repoussé silver disc from the hanging-bowl and of the animal ornament of the pommel and three ' pepper pots ', seem to establish links with the Northumbrian region which included south Scotland. The links are with the Lindisfarne Gospels and the Durham Cassiodorus; and the connection with the Monymusk reliquary probably points in the same direction; for though we do not know

[40] Brøgger's view (*Ancient Emigrants*, pp. 64–5). Cf. T. D. Kendrick's *A History of the Vikings*, p. 4: ' The almost empty Orkneys and Shetlands were seized by immigrant Norsemen.'

[41] Brøgger quotes here a speech by Dicuil (*c.* 825) concerning Shetland and Orkney ' other isles there are wherein lived for a space of a hundred years hermits voyaging there from our Scotia (Ireland) but now they are empty of anchorites by reason of Norse robbers.'

[42] J. R. C. Hamilton, *Excavations at Jarlshof, Shetland*, p. 106.

where this was made the fusion of styles on it and the quality of the work suggests Northumbria, or south-west Scotland. Much of the contents of the hoard might thus seem to have derived from the south. On the other hand, we do not know what workshops may have been established in the Pictish north.

The answers to these questions really depend on future excavations of the St Ninian's Isle site. The discovery of the hoard has made it a site of crucial importance to the whole question of what conditions greeted the Norse settlers when they began to arrive in Shetland, and the circumstances and fate of the Celtic inhabitants. It may be that the Christianization of Shetland was much more extensive, and the Celtic population more prosperous and firmly established when the first Norse settlers arrived, than has been hitherto supposed by those who have written on the subject.[43]

R. L. S. B-M.

[43] Central to this question are the Papil and Bressay stones and the claim of Goudie, quoted by Brøgger (p. 56), to have established the existence of three Ninianic and one Columban churches in Shetland. The present excavations may have established the genuineness of at least one of these.

Book Chronicle

We include here books which have been received for review, or books of importance not received for review, of which we have recently been informed. We welcome information about books, particularly in languages other than English and American, of interest to readers of ANTIQUITY. *The listing of a book in this chronicle does not preclude its review in* ANTIQUITY.

ANCIENT BOOK ILLUMINATION. *By* KURT WEITZMANN. *pp.* 166, 64 *plates. Cambridge, Massachusetts, The Harvard University Press* (*Published for Oberlin College and the Department of Art and Archaeology of Princeton*), 1959; *London, Oxford University Press*, 1959, 72*s.* Volume XVI of the Martin Classical Lectures of Oberlin College.

THE EARLIEST SAINTS' LIVES WRITTEN IN ENGLAND. *By* BERTRAM COLGRAVE. *London, Oxford University Press. pp.* 26. 3*s.* 6*d.* The Sir Israel Gollancz Memorial Lecture given at the British Academy in January 1958 and reprinted from the *Proceedings of the British Academy*, Volume XLIV.

THE GOLD OF TROY. *By* ROBERT PAYNE. *pp.* 273, 16 *plates, and* 3 *maps. New York, Funk and Wagnalls*, 1959. $3·95. An account of the work of Schliemann and the discovery of Troy, Mycenae and Tiryns. No index.

GENESIS AND GEOLOGY. *By* C. C. GILLISPIE. *pp.* 306. *New York, Harper*, 1959. $1·75. A paper-back edition in the Harper Torchbooks (in their series, The Library of Religion and Culture) of a book first published in 1951 as Volume LVIII of the Harvard Historical Studies. It is a study in the relations of scientific thought, natural theology, and social opinion in Great Britain, 1790–1850. Scholarly, authoritative, stimulating, and equipped with a most useful bibliography. Indispensable to all interested in the history of archaeology and the development of nineteenth century thought.

A HISTORY OF SCIENCE: HELLENISTIC SCIENCE AND CULTURE IN THE LAST THREE CENTURIES B.C. *By* GEORGE SARTON. *pp.* 554 *and* 112 *in text figures and illustrations. Cambridge, Massachusetts, Harvard University Press; London, Oxford University Press*, 1939, 63*s.* Volume II of Dr Sarton's History of Science, just completed before his death. Volume I, entitled Ancient Science through the Golden Age of Greece, was published in 1952.

[*continued on p.* 278.

ANTIQUITY XXXIII, 1959

Minoan Linear A: A Provisional Balance Sheet

by JOHN CHADWICK

In 1957 ANTIQUITY *published two articles by Dr Cyrus Gordon on the identification of the language of the Linear A script* (ANTIQUITY, 1957, 124–30 *and* 237–40), *and in the following year a criticism of these articles by Professor Maurice Pope and a rejoinder by Dr Gordon* (ANTIQUITY, 1958, 97–9 *and* 215–6). *The Editor invited John Chadwick, Lecturer in Classics in the University of Cambridge, author of* 'The Decipherment of Linear B (1958) *and, with the late Michael Ventris, of* Documents in Mycenean Greek (1956) *to provide our readers with a general summary of the present position regarding the decipherment of Linear A.*

THE decipherment in 1952 by Michael Ventris of the prehistoric script known as Minoan Linear B at once suggested that here lay the key to the earlier Cretan script called Linear A. Linear B was proved to be a syllabic script which represented, imperfectly but just adequately, the Greek language in a form more archaic than any other surviving records. At an early stage in our short-lived partnership I discussed with Ventris the possibility of applying the results to the older script, and we both made certain experiments; but we concluded that the situation did not allow any easy progress, and being deeply committed to the development of his Linear B theory, we decided to leave this field to others, at any rate for the time being. Since then a great deal of work on Linear A has been published by other scholars, almost all of it based upon the decipherment of Linear B, and equally inspired by the success which attended the solution of the major problem. It is not, perhaps, too soon to review some of these attempts and appraise the progress made so far. We are clearly far from an agreed solution; but there are encouraging signs that the true solution is not too far beyond our grasp, though I for one doubt whether it can be achieved by mere ingenuity. I should like to emphasize at the outset that I am completely neutral in the controversies which are raging, and this account is intended to be quite impartial.

Writing in Crete appears to be an independent development, certainly not derived from the Egyptian hieroglyphs, although Egypt may have provided a model for the growth of the indigenous system. The earliest signs are, like the Egyptian, pictographic in appearance; but by about 1800 B.C. the signs had been simplified to mere outlines and regularized. This Linear form (A) continued in use down to the 15th century B.C., and was the only script in regular use at all Minoan sites so far known. Its disappearance seems to coincide with the appearance at Knossos about 1400 B.C. of a different, but closely related, script, Linear B. The exact chronology is still disputed, and overlapping cannot be excluded as Linear B is so far known at only one site in Crete, Knossos.

THE MATERIAL

The chief documents are clay tablets, less than 200 in number, including many small fragments; the majority of these are from Hagia Triada, a site near Phaistos in the south of Crete. Only about thirty are reasonably complete; none contain continuous text; all appear to be brief inventories or records of the barest type, corresponding to the least informative B tablets. There is nothing to compare with the detailed descriptions found, for instance, in the Pylos furniture tablets.

About sixty short inscriptions are known on stone and metal objects, many of them having a clearly religious purpose (libation tables, ladles, etc.). In addition two cups from Knossos have painted or ink-written inscriptions. A few very short inscriptions (of from two to four signs) may be non-religious, but are probably personal names. There are also some graffiti, mostly very hard to read.

Potters' and masons' marks, many from sites outside Crete, have been claimed as samples of Linear A. Although in some cases the influence of the Linear A syllabary is probable, no inscription consisting of less than three continuous signs can be accepted with any confidence as writing (i.e. the phonetic notation of speech-forms) rather than distinguishing marks.

The paucity of the material is so glaring, compared with some 5000 tablets in B, that the doubt at once arises whether any progress towards a decipherment is possible. If script and language were both unknown, we could confidently deny this possibility; but, as will appear, the script is, within limits, readable, and thus theories can be formed about the affinities of the language.

COMBINATORY ANALYSIS

The first step towards decipherment must be the establishment of the syllabary, so that variant forms can be recognized and the reading of individual inscriptions normalized. Great progress in this was made by Pugliese Carratelli in his admirable edition of the material,[1] and his signary is generally adopted. The second step is the recording and comparison of all preserved sign-groups; this should disclose the homogeneity of the language at different sites; but unfortunately the paucity of material makes it impossible to prove that the clay tablets and the other inscriptions represent the same language. It is, however, reasonable to assume identity until the contrary can be demonstrated.

The analysis of the sign-groups might be expected to show evidence of inflexion, as Linear B did, if we are dealing with an inflected language. The examples found are meagre, and the greater number would not be recognized as possible inflexional variants but for the information provided by the inferred values of the signs (see below). The attempt by Furumark[2] to build a syllabic grid on the Ventris model is frustrated by lack of evidence; but such progress as is possible is encouraging as an additional check on the sign-values.

More hopeful is the identification of the meaning of sign-groups on the basis of their usage. Combinatory analysis provides a clear meaning for one word, a probable meaning for another, and the choice of meanings of two types for a further series of six words:

kuro[3]: this word occurs repeatedly at the bottom of tablets followed by large numbers. It would therefore be easily identified with B *toso*, *tosa* ' so many ' used as a totalling formula, even if it were not possible to demonstrate with fair certainty that on some tablets the number following *kuro* is the sum of the preceding numerals. One case in which the summation is faulty[4] does not invalidate this deduction; *toso* in B occasionally gives a figure other than the true sum of the preceding numbers.[5] This is the cardinal requirement for all attempts at

[1] G. Pugliese Carratelli, ' Le iscrizioni preelleniche di Haghia Triada', *Monumenti Antichi* **40** (1944) cols. 422–610.

[2] A. Furumark, ' Linear A und die altkretische Sprache', (duplicated), Deutsches Archäologisches Institut, Berlin, 1956.

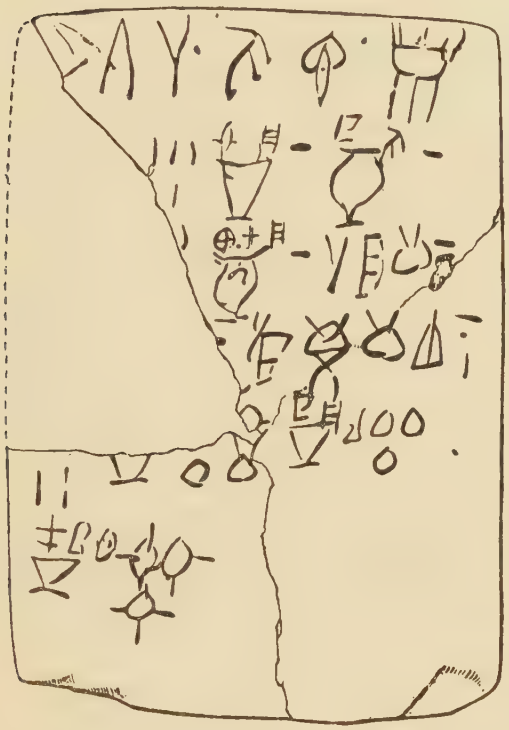
[3] Words are quoted here for convenience of printing not in Linear A, but in the inferred syllabic values described below.

[4] HT 118; 15 + 6 + 4 + 10 is totalled as 30; cf. C. Gordon, *Journal of Near Eastern Studies*, **17** (1958), pp. 245–55; E. Peruzzi, *Minos*, v, 1, p. 9.

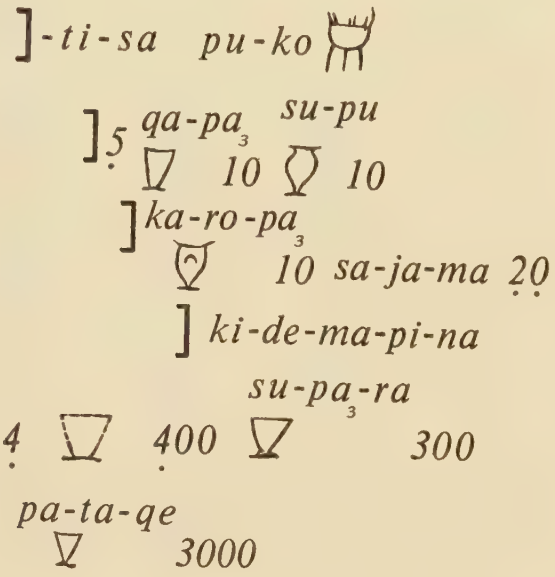
[5] e.g. Pylos Jn658: the product of 5 LB × 16 (= 80 LB) is written as 3 TALENTS 20 LB, instead of 2 TALENTS 20 LB (1 TALENT = 30 LB).

identifying the language: the syllables *kuro* (with their optional variants *guro*, *khuro*, *kulo*, *gulo*, *khulo*, etc.) must represent a word expressing the idea of summation.

kiro (and the abbreviation *ki*) is used on a few tablets in a manner reminiscent of B *opero* (abbreviated *o*) ' deficit, unpaid '. This meaning is probable rather than certain.



(*a*)



(*b*)

Fig. 1. Tablet 31 from Hagia Triada.

HT 31 (Fig. 1) shows a variety of vessels, which are annotated by sign-groups written over them. These words must be descriptions of either the vessels or their contents; since they are all different, they are probably not epithets such as ' large ', ' golden ', ' silver ', etc. Since the shapes of the vessels are also all different, the words are more likely to refer to the type of vessel than the contents; and the analogy of similar lists in B[6] shows that such tablets are usually inventories of vessels.

A word repeated several times on inscribed ritual objects (but never on clay tablets) is *asasara* or *jasasara*, twice in the form *asasarame*. The analogy of similar dedicatory inscriptions suggests that it is either a word describing the dedication (as Greek *anethēke*) or the name of the deity to whom the offering is made. The fact that it once stands alone strongly supports the latter explanation. There are no Linear B parallels to act as a check.

[6] Pylos Ta641, Tn996; Knossos K 740.

SYLLABIC VALUES

Since Linear B is clearly derived from Linear A or a close relative, it is reasonable to assume that the values of the signs which can be equated are similar if not identical. The variations in form, and the number of signs not shared by the two systems, suggest that their relation is not one of direct descent, so it is probably fair to suggest as a comparison the

A	B	Value in B	Cypriot	Value in Cypriot
		ka		*ka*
		ki		*ki*
		da		*ta*
		ti		*ti*
		to		*to*
		pa		*pa*
		ro, lo		*lo*
		na		*na*
		we		*we*
		sa		*sa*
		se		*se*

Fig. 2. Comparison of signs in Linear A, Linear B and Classical Cypriot.

classical Latin alphabet and the contemporary form of the Greek alphabet. In these fifteen letters are identical or similar in both form and sound[7]; five Latin and six Greek letters are without equivalents; and three are virtually identical in form but have completely different values (H, P, X). It is perhaps unfair to press this analogy, but the possibility that one-

[7] Counting K as a Latin letter, and allowing the equation C = Γ.

eighth of the values transferred from B to A are wrong casts a faint shadow of doubt on any deductions made by this means. Fortunately the work of Furumark[8] on the construction of a grid for A confirms some values; and a further encouraging sign is the appearance of names in A which are known in B. For instance the place name B *Kudonija* is paralleled by A *Kudoni*, B *Dikata* by A *Dikatu*, and there are similar pairs among the personal names: B *Aranaro*, A *Aranare;* B *Qaqaro*, A *Qaqaru*. There is even the A word *sasame* which resembles the B *sasama* meaning ' sesame '; since it is a loan-word in Greek from a Semitic language, there is no objection to its presence in Minoan. Whether *kumina* on a sealing is identical with B *kumina* ' cumin ', another Semitic word, is purely a matter of conjecture.

A further check can be made by means of the Cypriot syllabary, which belongs to the same family of scripts, but remained in use down to the classical period. In the course of its evolution it underwent great changes, and most of the signs are very hard to equate with their counterparts in Linear B. The readable Cypriot syllabary is presumably descended from the undeciphered Cypro-Minoan script which is roughly contemporary with Linear B, but in its earliest form seems to be earlier. For this and other reasons it is likely that the Cypriot scripts are descended not from Linear B but from A or an even more remote ancestor. Thus where the signs of B and Cypriot agree in sound as well as form, we can be fairly certain that this value is to be ascribed to A too (Fig. 2). It is thus highly probable that where the correspondence of forms between A and B is close, the values may be safely transferred. Some reservations must be made on the value of the *d* signs of Linear B, since Cypriot makes no distinction between *d* and *t*, and Cypriot *ta* is the same sign as B *da* (see Fig. 2). The true value of the *z* signs is also a matter of conjecture.

In addition to the publications of Meriggi and Furumark cited above, lists of identifications of the Linear A signs have been prepared by Pugliese Carratelli[9] and by Goold and Pope.[10] If we combine these four lists, we can plot a table showing which values have their Linear A signs reasonably well established; that is to say, those which are identified by all or nearly all with the Linear B signs with these values.

a				*u*
ja	*je*			
wa	*we*			
da	*de*	*di*		*du*
ka		*ki*	*ko*	*ku*
ma	*me*	*mi*		*mu*
na		*ni*	*no*	*nu*
pa		*pi*		*pu*
pa_3				pu_2
qa	*qe*			
ra	*re*		*ro*	*ru*
ra_2				
sa	*se*		*so*	*su*
ta	*te*	*ti*	*to*	*tu*
ta_2				
za			*zo*	

Fig. 3. Linear A values generally agreed.

[8] See note 2.

[9] G. Pugliese Carratelli, ' La decifrazione dei testi micenei e il problema della Lineare A,' *Annuario della Scuola Archaeologica di Atene*, 30–2, pp. 7–21.

[10] G. P. Goold and M. Pope, ' Preliminary investigations into the Cretan Linear A Script' (duplicated), Cape Town, 1955.

There is a notable weakness in the signs with the vowel *o*, which even where identified are relatively rare. On the other hand signs containing *u* are much more frequent, and often occur in final syllables. The vowels *e* and *i* also show some weakness, as if they were not always clearly distinguished; and this may be connected with occasional waverings between the same two vowels in Linear B spellings.

LINGUISTIC STRUCTURE

The mere structure of the syllabary also tells us something about the language for which it was designed. These arguments must be used with caution, since the language of Linear A is not necessarily that for which the script was designed, just as Linear B is quite clearly not designed for Greek. However, the syllabic script suggests that ' Minoan ' was a language abounding in open syllables, that is, ones ending in a vowel, and without complicated groups of consonants; ' after the pattern of *hula hula* or *kia ora*, rather than that of *knōps* or *Sphinx*.'[11]

The failure of Linear B to distinguish between *l* and *r* is presumably due to a language which possessed only one of these sounds, like Chinese or Japanese. Cypriot, however, has separate signs for *l-* and *r-*; but it is a little more likely that this is due to a later local reorganization of the script, than that Linear B ignored a distinction which was important for Greek.

It is also clear that Linear B operated with signs in which a semi-vowel, *y* (conventionally written *j* in transcription) or *w*, intervenes between consonant and vowel. Thus we have *rja* (= ra_2), which replaces *rija* in some words, *rjo*, *tja* (=ta_2); and *nwa*, *dwo*, etc. The series transcribed *qa*, *qe*, etc. probably belong to the latter type (i.e. *kwa*, *kwe*, etc.).

On the other hand Linear B ordinarily ignores the distinction of voiced and unvoiced stops (*k*/*g*, *p*/*b*) which is an important opposition in the Indo-European languages. The exception *t*/*d*, for which Linear B has two series of signs, is probably a special development, since it is not shared by Cypriot. Equally the aspirate is ignored; there are no signs to denote initial *h-*, nor are the aspirated consonants (*kh*, *ph*, *th*) distinguished from the unaspirated. It is very hard to evaluate these clues to the Minoan language, but in so far as any solution agrees with the indications it will gain in probability.

THE AFFINITIES

The results obtainable by the combinatory method are meagre because of the lack of suitable material. Attempts have therefore been made to make further progress by discovering the affinities of the language; just as Old Persian was deciphered with the help of the Avesta, or Egyptian with the help of Coptic. Unfortunately the Minoan language—if we may use that convenient label—seems to have died out without leaving any descendant. A few inscriptions of the 6th—4th centuries B.C. found at Praisos in East Crete are in Greek script but an unknown language, so these offer no help. However, if we could identify Minoan as a member of a known family of languages, this would provide a valuable clue.

The situation is remarkably similar to that which confronts the student of Etruscan. There the script is well known and, the material being much larger, the combinatory method has established beyond doubt the meaning of a fair number of words. But the affinities remain elusive. From time to time a new theory is enthusiastically proposed, and its exponent gives values to the unknown words on the basis of allegedly cognate words in another language. But no theory of this kind has stood up to rigorous testing, and the more cautious scholars are content to leave the question open.

[11] *Documents in Mycenaean Greek*, p. 69.

Even once the linguistic affinities of a newly deciphered language have been shown, interpretation by the etymological method is exceedingly risky. Hrozny, who opened the way to the understanding of Hittite by showing that it was an Indo-European language, also hampered the work by excessive trust in his speculative etymologies. Bearing these cautionary tales in mind, we shall do well to approach the Minoan theories with deliberate, but not extravagant, scepticism.

We may divide the plausible theories into two groups. I set aside at once the theory of Georgiev[12] that Linear A contains Greek; his results are achieved only by tampering with the syllabic values derived from B, and although this is not a complete bar to acceptance, it demands a much higher standard if the results are to carry conviction. It is the general belief of experts that this attempt has failed.

We may take first the Indo-European hypothesis. In 1955 the Italian scholar Pugliese Carratelli suggested the possibility of Indo-European affinities, but would not commit himself to this view.[13] The following year another Italian, Meriggi,[14] who had earned a great reputation by his work on Hieroglyphic Hittite, pointed to some striking parallels between Linear A and certain Indo-European languages of Asia Minor; A *wadunimi* agrees well with the Lycian name *βadunimi*. In the same year the Swede Furumark circulated in preliminary form the results of his study[15]; in this he adopted an admirably cautious approach, but pointed to some words ending in *-ti*, which, he suggested, might be Indo-European verbal forms of the third person (as for instance Sanskrit *bharati* ' he bears ', Hittite *akwantsi* ' they drink ').

The latest adherent to this theory is Palmer,[16] the Oxford Professor who has made important contributions to the study of Linear B. He argues on archaeological grounds that some cultural affinity existed between South-West Anatolia and Crete in the early 2nd millennium B.C. It is therefore reasonable to seek linguistic affinity there too. The language of this area is believed on the evidence of Hittite texts to be Luvian. This is very little known, but is related to Cuneiform Hittite, and more closely, it now seems, to Hieroglyphic Hittite. At least it is certainly of Indo-European origin.

Palmer has produced one striking piece of evidence in favour of his theory. The probable divine name *Asasara* (see p. 271 above) bears a resemblance to the Hittite divine title *Ishassaras* meaning ' Mistress, Lady.' There is some evidence that we might expect Luvian to replace the initial *I-* by *A-*; unfortunately the word does not appear in our very meagre remains of Luvian, and this assumption, plausible as it is, is the weakest link in the chain. But if the Luvian form was *Ashassara*, then the similarity to the Linear A form is undeniable. This could still be an accidental resemblance; what makes it hard to believe that, is that the Luvian for ' my Lady ' would apparently be *Ashassara-mis*, and this agrees closely with the extended form found twice in Linear A, *Asasarame*. Unfortunately this is all, so far. Palmer supports it by appealing to the mountain name *Parnassos* (located in mainland Greece, not Crete), which, he claims, meant in Luvian ' of the temple.' This is an interesting possibility, but no more; for it has yet to be proved that pre-Greek place-names as a whole are directly relevant to the Minoan language. Before giving our vote to this theory we are

[12] V. Georgiev, Le déchiffrement des inscriptions crétoises en Linéaire A, and La position du dialecte crétois des inscriptions en Linéaire A, *Studia Linguistica in honorem Acad. Stephani Mladenov*, Sophia, 1957, pp. 419–50.

[13] See note 9.

[14] P. Meriggi, ' Primi Elementi di Minoico A' (Suplemento a *Minos*), Salamanca, 1956.

[15] See note 2.

[16] L. R. Palmer, ' Luvian and Linear A,' *Transactions of the Philological Society*, 1958, pp. 75–100.

justified in demanding not one, but five or six such pieces of evidence. Cumulatively they would be irresistible; but for the moment we must suspend judgment.

The alternative theory completely excludes the Indo-European view; the two could only be reconciled if the language of the tablets were different from that of the religious inscriptions, for Palmer's tempting equation is based entirely upon these, while the other theory is most successful with the tablets. The existence of a religious language, like Latin in England, used for special purposes alongside a totally unrelated one in everyday use is not by any means impossible; but much more evidence will be needed before we make this bold supposition.

The rival theory, then, proposes Semitic affinities. The ancient Semitic languages best known are Biblical Hebrew, Akkadian (or Babylonian) written in the cuneiform script, and Ugaritic (the dialect of Ugarit on the coast of Syria) written in a simplified cuneiform. These three languages are fairly closely related, and Semitic forms a coherent family like, but totally unrelated to, the Indo-European group. At first sight connexions between Crete on the one hand, and Syria, Palestine or Mesopotamia on the other, seem less likely than with Anatolia; certainly the archaeological evidence offers little indication of basic affinity in the cultures, though trade is attested. If Crete was part of the Semitic world we may feel surprised that its inhabitants did not adopt the widely known cuneiform script to write their language. However, it is impossible to exclude Semitic connexions on external grounds.

The first to publish a Semitic interpretation of Linear A was Gordon, who printed two short articles in this journal.[17] He was quickly attacked by Pope of Cape Town, who pointed out a number of wrong readings and faulty arguments in Gordon's work.[18] But Pope himself had also speculated on the Semitic connexion, and soon produced a much more moderate and tentative approach.[19] He was joined by another scholar from South Africa, Davis of Witwatersrand.[20] All three accept certain identifications, but disagree on others; there is no agreement on whether the language is merely of the Semitic family or specifically Akkadian, which is the more recent view of Gordon. Pope rightly emphasizes that more than a few technical words must be identified to prove the nature of the language, since these might be simply borrowed. Only if Semitic inflexion and grammar is discernible shall we feel convinced.

There is a major difficulty in the way of accepting equations of Linear A spellings with Semitic words. Almost all Semitic words are composed of three consonants, and the vowels between them vary not only from language to language, but between different inflexional and derivative forms in the same language. The effect of this is that the vowels of Linear A can be virtually disregarded in proposing equivalents. For instance, all the Semitizing party equate *supa*$_3$*ra* with Akkadian *saplu*, Hebrew *sepel*. Are the consonants safe ? I doubt it. Gordon is at pains to point out that the Semitic *koph* (*ḳ*) is a very different sound from the *q* of Linear B, which is really a device of transcription for *kw*. Pope cheerfully assumes that *koph* will have been adopted by the Greeks to express their *kw*. Davis modifies the system here: *q* is equated with *koph*, but *qe* is read *qa*, *ke* is read *qe*, *ki* is read *qi*, *qa* (= *pa*$_2$) is read *qu*, *ko* is read *ḫu*. Confusions of this sort make it hard to keep our bearings, but they do not invalidate the theory; we need not suppose that the Linear B values are exactly repro-

[17] C. Gordon, ' Notes on Minoan Linear A,' ANTIQUITY, 1957, pp. 124–30; ' Akkadian Tablets in Minoan Dress; ANTIQUITY 1957, pp. 237–40. See also his letter in ANTIQUITY, 1958, pp. 215–16; and ' Minoan Linear A', *Journal of Near Eastern Studies*, **17** (1958), pp. 245–55.

[18] M. Pope, ' The Linear A Question', ANTIQUITY, 1958, pp. 97–99.

[19] ' On the language of Linear A,' *Minos*, VI, i (1958), pp. 16–23.

[20] S. Davis, ' The Language of the Linear A Script of Minoan Crete and its Morphology ' (duplicated), London Institute of Classical Studies, 1959. See now *Greece and Rome*, N.S. 6 (1959), pp. 20–30.

(*a*)

(*b*)

THE ST NINIAN'S ISLE HOARD

External views of Silver Bowl, Inventory No. 1.

cf. pp. 257–8 *and* 262–8]

[*Photos:* British Museum

(*a*)

(*b*)

(*c*)

THE ST NINIAN'S ISLE HOARD

(*a*) *Silver Bowl, Inventory No.* 4. (*b*) *Silver Bowl, Inventory No.* 2. (*c*) *Silver Bowl, Inventory No.* 3.

cf. pp. 257–8 *and* 262–8]

[*Photos:* British Museum

(*a*)

(*b*)

THE ST NINIAN'S ISLE HOARD

(*a*) *External views of Silver Bowl, Inventory No.* 5 (*see also* Pl. XXIX (*b*)); (*b*) *Silver Bowl, Inventory No.* 6 (*see also* Pls. XXIX (*a*) *and* XXXII (*d*)).

cf. pp. 257-8 *and* 262–8

[*Photos:* British Museum

(*a*)

(*b*)

THE ST NINIAN'S ISLE HOARD

External views of Silver Bowl, Inventory No. 7.

[*Photos:* British Museum

THE ST NINIAN'S ISLE HOARD

(*a*) *Silver Bowl, Inventory No.* 6 (*see also* Pl. XXVII (*b*)); (*b*) *Silver Bowl, Inventory No.* 5 (*see also* Pl. XXVII (*a*)); (*c*) *Hanging Bowl, Inventory No.* 8 (*see also* Pl. XXX (*a*) *and* (*b*), Frontispiece, *and Fig.* 4).

cf. pp. 257–8 *and* 262–8]

[*Photos:* British Museum

(*a*)

(*b*)

THE ST NINIAN'S ISLE HOARD

Hanging Bowl, Inventory No. 8: (a) Internal view; (b) External view showing secondary silver repousse trumpet-pattern disc in place (*see also* Pl. XXIX (*c*), Frontispiece *and Fig.* 4).

cf. pp. 257–8 *and* 262–8]

[*Photos:* British Museum

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THE ST NINIAN'S ISLE HOARD

(a), (b) and (c), Silver Spoon, Inventory No. 9, *c, shows detail of the dog's head; (d) One-pronged implement, Inventory No.* 10 (*see also Fig.* 5). *(e)–(j) Conical Mountings, or 'Pepper-pot' objects,* viz:— *e, h, Inventory No.* 12 (*see also* Pl. XXXII (*a*) *and Fig.* 7); *f, i, Inventory No.* 13 (*see also* Pl. XXXII (*c*) *and Fig.* 8 (*c*); *g, j, Inventory No.* 14 (*see also* Pl. XXXII (*b*) *and* (*f*)).

cf. pp. 258–60 *and* 262]

Photos: British Museum

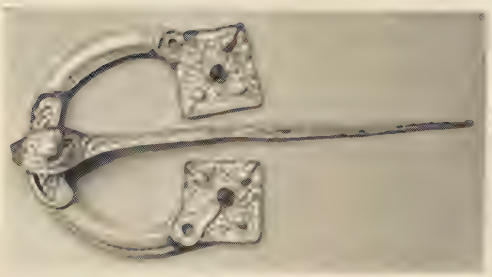
THE ST NINIAN'S ISLE HOARD

(*a*), (*b*), (*c*), (*e*), (*f*) *and* (*g*), *Conical Mountings, Inventory Nos.* 12–14 (*see* Pl. XXXI (*e*) *to* (*j*), *Figs.* 7 *and* 8 (*c*)); (*d*), *Escutcheon, Inventory No.* 6; (*h*) *Sword-Pommel, Inventory No.* 11 (*see Fig.* 6); (*i*), (*j*), *Chape, or horse-shoe mounting, Inventory No.* 16 (*see Fig.* 8 (*a*) *and* (*b*)); (*k*) *and* (*l*), *Chape with inscriptions, Inventory No.* 15 (*see Fig.* 9).

cf. pp. 250–5 *and* 260–1]

[*Photos:* British Museum

(*a*)



(*b*)

(*c*)

(*d*)

(*e*)

(*f*)

THE ST NINIAN'S ISLE HOARD

Penannular brooches: (*a*) *Inventory No.* 17; (*b*) *Inventory No.* 18; (*c*) *Inventory No.* 20; (*d*) *Inventory No.* 28 (*see also* Frontispiece); (*e*) *Inventory No.* 22; (*f*) *Inventory No.* 21.

cf. pp. 255–7]

[*Photos:* British Museum

THE ST NINIAN'S ISLE HOARD

Penannular Brooches: (*a*) *Inventory No.* 27; (*b*) *Inventory No.* 26; (*c*) *Inventory No.* 25; (*d*) *Inventory No.* 23; (*e*) *Inventory No.* 24; (*f*) *Inventory No.* 18.

cf. pp. 255 7]

[*Photos:* British Museum

(*a*)

(*b*)

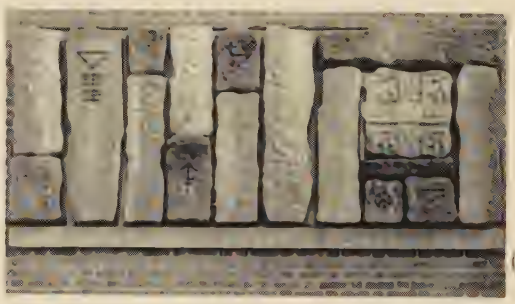
MEGALITHIC FOLLIES (*a*) *and* (*b*) TIBRADDEN:
(*a*) *The 'chamber' around the central cist looking west;*
(*b*) *the 'passage' looking east (note the stone bench).*

(*c*)

(*c*) MASHAM: *the 'temple'.*

[*Photos:* R. Daniel

(*a*)



(*b*)

(*c*)

MEGALITHIC FOLLIES

(*a*) *and* (*b*) CAMBRIDGE: *the University Chemical Laboratories. Panel on Wall* (12 *ft.* × 5 *ft.*). (*c*) MASHAM: *one of the 'mock-dolmens' (the Editor provides the scale).*

[*Photos:* R. Daniel

duced in Linear A. But the nature of the Semitic languages allows such freedom in the choice of words for comparison that we shall demand a very high standard in the results obtained.

A preliminary test by Pope is a useful pointer. He compared the frequencies of the sounds which begin words in Hebrew and in Linear A. The correspondence is surprisingly close, except for sibilants and dentals; sibilants are more frequent in Hebrew, dentals in Linear A. Pope therefore welcomed my own suggestion that these figures might be harmonized if we assume that dentals appear in Linear A for certain Semitic sibilants, just as the name of Tyre was spelt by the Greeks with *T*-, but begins in Semitic languages with *S*-.

The theory can be tested best at three points. Does it offer satisfactory identifications for the ' total ' word, for the names of the vessels, and for the few inflexional elements which have been noticed ? The totalling formula *kuro* was equated at first by Gordon with a common Semitic root *kull-* meaning ' all ' (Akkadian *kalu*, *kullatu*, Hebrew *kôl*). This is accepted by Pope and Davis; but surprisingly it was withdrawn by Gordon in his second article; here he assumed that the value *ku* was uncertain, though there can be little doubt about the identity of the sign with B *ku*, and conjectured for it *mu*. The word is then the Akkadian *mullū* ' paid out, issued.' Although one or two other words containing this sign are identified by the transcription *mu*, none is compelling. The trouble seems to be that although *kull-* means ' all ', it is not used to write summations in any Semitic language; certainly not in Akkadian, so that this had to be modified to allow Gordon to assert that Linear A was pure Akkadian.

The vessel names are a little more tractable. All three are agreed on *supu* = Akkadian *sappu*, Ugaritic *sp* (no vowels are written in Ugaritic); *karopa*$_3$ = Akkadian *karpu;* and *supa*$_3$*ra* = Akkadian *saplu*, all of which are the names of vessels. Various other identifications have been proposed; for instance Davis equates *pataqe* with Akkadian *batḳianu*. Neumann[21] explains two of these words by obscure words in Greek: *supu* = *sipuē* ' jar ' or ' tub ', *pataqe* = *batiakē* ' a kind of cup.' Since neither of these words have clear Greek etymologies they are probably loans from another language, as are many Greek vessel names; but they do nothing to prove the nature of that language, and in the latter case the source of the loan is probably Iranian.[22]

The word *kunisu* was identified by Furumark as meaning a kind of grain; and this deduction was subsequently confirmed by the join of two fragments, which proves that the word is introduced by the ideogram WHEAT.[23] The equation with Akkadian *kunašu*, ' a kind of wheat ' is therefore very promising. Of the other words proposed none can be satisfactorily tested by combinatory methods.

The inflexions are best dealt with by Pope. It certainly looks as if *kupa*$_3$*natu* is the plural of *kupa*$_3$*nu;* this agrees well with Akkadian plurals like *ḥazannatu* ' mayors ' from a singular *ḥazannu*. Less certain is *dakusene*/*dakuseneti*, which would correspond to an Akkadian plural in *-eti*. Gordon and Davis both see in Linear A *o* the Semitic *u* ' and '; but the two examples quoted are unconvincing, since *o* appears rather to be an abbreviation or ideogram. Pope finds the same word in Linear A *u-* prefixed to words; this is more hopeful, but still inconclusive.

[21] G. Neumann, ' Zwei minoische Gefässbezeichnungen,' *Glotta* **37** (1958), pp. 106–12.

[22] Athenaeus 784 a/b; cf. H. H. Schaeder, *SPAW*, 1935, p. 491, n. 1. (I am indebted to Professor O. Masson for these references.)

[23] M. Pope, *Minos*, VI, i, p. 21, n. 3. Professor Pope has kindly informed me that the join was there wrongly credited to Bennett; it was proposed by Mr W. Brice, and confirmed by the authorities at Iraklion Museum, but has not yet been published.

CONCLUSION

From this review only one conclusion can be drawn: that Linear A is not yet deciphered, and despite the energy and enthusiasm of their supporters, neither of the theories of affinity can be accepted on present evidence. We must not lose sight of the third possibility, that Minoan is unrelated to any other known language. Indeed, even if the true solution were now proposed, I very much doubt if enough material exists to give a convincing proof of it. Firm progress in this direction must inevitably depend upon the discovery of more inscriptions. Meanwhile we must be content with the useful work which has been done, and still continues, on the establishment of the readings and the signary, and the internal analysis of the inscriptions.[24] Even if we cannot read Linear A, we now have a growing body of knowledge about the contents of the tablets; and this will enable us to judge the claims of decipherment which will doubtless continue to be made.

[24] Mention should be made here of the useful studies by E. Peruzzi: ' Elenchi di persone da Haghia Triada', *Parola del Passato*, 51 (1956), pp. 434–8; ' L'iscrizione HT 13', *Minos*, v (1957), pp. 35–40; ' Note minoiche', *Minos* vi, (1958), pp. 9–15; ' L'iscrizione HT 31 ', *Minoica* (Sundwall Festschrift), Berlin, 1958, pp. 287–93. His ' Recent interpretations of Minoan (Linear A),' *Word* 15 (1959), pp. 313–24, reached me only after this article was written.

Book Chronicle—*continued from p.* 268

THE SCEPTER OF EGYPT: PART II: THE HYKSOS PERIOD AND THE NEW KINGDOM. *By* William C. Hayes. *pp.* 496, 274 *in-text illustrations*, 1 *map. Published for the Metropolitan Museum of Art by the Harvard University Press, Cambridge, Massachusetts*, 1959; *London, Oxford University Press*, 120*s*. This volume, like its predecessor published in 1953, which traced the story of man in Egypt from the dawn of history to the end of the Middle Kingdom, is intended as a background for the study of the Egyptian antiquities in the Metropolitan Museum of Art.

LA CIVILTÀ APPENNINICA. *By* Salvatore Puglisi. *p.* 115, 22 *plates*, 29 *text figures*, 4,500 *lire*. An account of the Apennine Culture by the Keeper of Prehistory in Museo Nazionale Pigorini at Rome. It is subtitled ' The Origin of Pastoral Communities in Italy ' and is a volume in the series *Origines* published by the Istituto Italiano di Preistoria e Protostoria under the editorship of Professor Graziosi.

PRIMITIVE PEOPLES TODAY. *By* Edward Weyer. *pp.* 286, 212 *photographs and* 14 *text-figure maps. London, Hamish Hamilton*, 1959. 63*s*. An extremely well illustrated and interestingly written account of the so-called ' uncivilized ' people of the world today.

LOST LANGUAGES. *By* P. E. Cleator. *pp.* 192, 17 *plates*, 21 *text figures. London, Robert Hale*, 1959. 21*s*. A popular account of the decipherment of Egyptian hieroglyphs and cuneiform, Hittite and Linear B with notes on scripts still undeciphered.

THE TOMBS OF ST PETER AND ST PAUL. *By* Engelbert Kirschbaum. *pp.* 247, 44 *plates* (*including four in colour*), 57 *text figures. London, Secker and Warburg*, 1959. 45*s*. A translation of *Die Graber der Apostelfuersten* first published in 1957 by the Professor of Archaeology and Art History at the Universita Gregoriana at Rome.

THE SEARCH FOR THE TASSILI FRESCOES. *By* Henri Lhote. *pp.* 237, 72 *plates* (*many in colour*), 4 *maps. London, Hutchinson*, 1959. 35*s*. A translation by A. H. Brodrick of Lhote's story of the prehistoric rock-paintings of the Sahara first published as *A la découverte des fresques du Tassil.*

[*continued on p.* 284.

Cropmarks in Antiquity

by B. M. FAGAN

Mr Brian Fagan, Keeper of Prehistory at the Rhodes-Livingstone Museum, Northern Rhodesia, discusses observations of the importance of cropmarks in archaeology in the days before air photography produced an overhead view.

'THERE is one straung thing seen ther that in certen Partes of the Ground withyn the Waulles, the Corne is mervelus faire to the Yee, and ready to show Perfecture, it decayith '.[1]

This passage, written by John Leland (1503–1552) after his visit to Silchester in 1541, is perhaps the earliest recorded observation of a cropmark. His account of Silchester was used by most serious workers on the site for the next two hundred years, and treated with the respect it deserved. Willian Camden used it on his visit, and we are not surprised to read in *Britannia*:

' The inhabitants of this place told me, it had been a constant observation of theirs, that though the soil here be fat and fertile, yet in a sort of baulks that cross one another, the corn never grows so thick as in the other parts of the field; and along these they imagine the streets of the old city to have run. Here are commonly dug up British Tiles and great plenty of Roman Coins '.[2]

Furthermore, at Richborough he records:

' But now age has erased the very tracks of it; and to teach us that cities dye as well as men, it is at this day a cornfield, wherein when the corn is grown up, one may observe the draughts of the streets crossing one another (for where they have gone the corn is thinner), and such crossings they call St. Augustine's Cross '.[3]

Camden seems to have noted these two cropmarks as items of curiosity rather than scientific interest, and it is rather surprising that he does not mention their occurrence at other Roman sites, such as Verulamium. Probably he was prompted to record them as examples of local folklore rather than archaeological facts.

John Aubrey visited Silchester in 1667, and made no personal comment on the street plan. He does however record a ' Philosophicall Corollery ' . . . ' avowed to me by 2 learned Prelates of unquestioned veracity . . . that one might decerne in the corne ground (it was about April) the Signe of the Streets, passages, and also the Harths.'[4]

Thomas Hearne (1678–1735), the well-known transcriber, was another observer of cropmarks. In addition to the Silchester cropmark, which he recorded as a result of a visit in 1714 in connection with the publication of Leland's *Itineraries*,[5] he also observed the phenomenon at Dorchester, Oxon., in 1722.

'Above the stone that shows Oxford way around Dorchester is the trace of a strange old path, as appears from the corn when it comes to be almost ripe, which is then of quite a different colour from the rest, like that at Silchester,' [6]

[1] Leland, *Itineraries* (Hearne's edition, 1719), VI, 52.
[2] Camden, *Britannia* (Gibson's edition, 1695), p. 126.
[3] *Ibid.*, p. 202.
[4] Aubrey, *Monumenta Britannica*. MS Bodl. Top. Gen. C 24.f.214, 215. Quoted from G. C. Boon, *Roman Silchester* (1957), which contains an interesting history of that site.
[5] Hearne Papers IV, *Oxford Historical Society*, Vol. 34 (1897), p. 363.
[6] Hearne Papers VII, *Ibid.*, Vol. 50, (1907), p. 2.

Clearly, to Hearne and his predecessors, the cropmark was, in the words of Aubrey, ' a Philosophicall Corollary '. While they were aware of the significance of the marks, their observations were confined to sites where the cropmarks were well-known to local people, and recorded in local folklore. To a certain extent, this is because the early antiquaries were, with exceptions, preoccupied with topographical descriptions of Britain and her Counties, rather than detailed research. Camden's avowed task was ' to show Britain to the world ', and his example was followed eagerly. As a describer of Britain he had no need to delve into the minutiae of individual sites. Yet when an interesting feature presented itself, he recorded it without going out of his way to analyse it in detail. Thus, perhaps it is logical that Stukeley, with a preoccupation with Roman roads and town, should have made greater use of cropmarks.

Stukeley must take the credit for being the first to make scientific use of the cropmark. In his *Itinerarium Curiosum* (1725) he makes at least seven references to these features. His fieldwork at Great Chesterford in July, 1719, is well known.

' In the North-West end of the city, the people promised to show me a wonderful thing in the corn, which they observed every year with some sort of superstition. I found it to be the foundation of a Roman temple very apparent, it being almost harvest time. Here the poverty of the corn growing where the walls stood, defines it to such a nicety that I was able to measure it with exactness enough.' [7]

This appears to be a conscious use of the cropmark as a method of fieldwork, and yet another example of Stukeley's ability as an objective fieldworker in his early life. He mentions the cropmarks at the Roman settlements of Derventio[8] near York, Richborough,[9] Verulamium[10] and Castor, where he records caustically that ' the vulgar have a foolish story about it as at other places '.[11] He even used a parchmark to record the course of a Roman road at a crossroads south of Bicester:

' It is visible enough to the nice eye, the grass being poor, and much abates its verdure for its whole breadth.' [12]

At Silchester, however, he dismissed the streetplan in one laconic sentence: ' The streets are still visible in the corn.' [13] This may well be one of the reasons why he incurred the wrath of Hearne, who attacked Stukeley's inaccurate planning of the site, in his best polemical manner, and described him as ' a very fancifull Man '. In spite of Hearne it may be safely said that Stukeley as an observer of cropmarks was not surpassed for at least fifty years.

The lack of objective fieldwork after 1730 can no doubt be correlated with the decline in antiquarian studies and scientific activity at the time. At Silchester, however, a certain John Stair, a local publican, was excavating the street-plan of the city as revealed by his study of the cropmarks.

' The method he took to discover where the streets formerly ran was by observing first before the Harvest for several Years, the places where the Corn was stunted and did not flourish as it did in other parts. These places are very easily distinguished on a dry summer and run in straight lines, crossing one another. Then, on digging there, he found a great

[7] Stukeley, *Itinerarium Curiosum*, 1725, Iter V, (1719), p. 75.
[8] *Ibid.*, Iter III (1713), p. 50.
[9] *Ibid.*, Iter V (1719), p. 118.
[10] *Ibid.*, Iter V (1719), p. 110.
[11] *Ibid.*, Iter V (1719), p. 83.
[12] *Ibid.*, Iter II (1712), p. 41.
[13] *Ibid.*, Iter VII (1724), p. 170.

deal of Rubbish and the plain Rooms, and foundations of Houses on each side of the streets.' [14]

A plan of Silchester incorporating the cropmarks was published in the *Philosophical Transactions* for 1748, and was based on Stair's work.

Although Colt Hoare's references to the Silchester streetplan are confined to a quotation from Leland and a footnote, he does use a cropmark to trace the course of the Wansdyke near Stantonbury Camp;

'. . . its track to Breed Wood is well known, and is there visible. It emerges from the copse in a very conspicuous manner, and ascends the hill through two pasture grounds; in the uppermost of which, on the right of the dyke, I noticed the site of a small earthwork. From thence, I easily recognized by the colour of the corn, its course over an arable field, from which it again enters a copse, and skirting its declivities, crosses a road which leads direct to the turnpike gate at Burnthouse.' [15]

The observations of Stephen Stone, the Oxford antiquary, at Standlake, Oxon., open a new phase in our history which culminated in the use of aerial photography. He excavated this Late Bronze Age urnfield and Early Iron Age village as a result of seeing the cropmarks in corn sown on gravel. To his report he appended the following remarkable statement;

'Advantages are offered by the nature of the soil in this neighbourhood which are not generally met with; in the first place, the soil is easily worked, and the relics which lie below the surface will be found at no great depth. But an advantage of far greater importance consists in the fact that from the shallowness of the soil, and its inability to retain moisture for any length of time, lying as it does on a bed of gravel, which acts as a most effectual drain, the crops of corn or clover, or whatever may chance to have been planted are so quickly affected by drought that a few successive days of dry sunny weather in summer are sufficient to show the situation and extent of every excavation underneath the soil as clearly as though a plan had been prepared and drawn on paper. The explorer therefore will have no need to . . . spend time and labour in endeavouring to discover what, after all, he might not perchance succeed in finding; he has merely to mark in a time of drought while the corn & is yet green, the situation of such excavations as may appear to him desirable to open, and after harvest proceed with his work.' [16]

This must rank as the earliest clear exposition of the cropmark and its archaeological potentialities, and it is significant that his observations were followed by those of others in the same area. In the same report, he urges his fellow antiquarians to concentrate on ' the domestic arrangements of the Britons ', and on their everyday utensils and settlements, and his talk to the Society was illustrated by models and plans of the excavation.

Stone's report marks the beginning of the modern era of cropmark usage. The Rev. J. G. Joyce excavated the Silchester cropmarks, albeit unsystematically, from 1864–78. In the Oxford area Stone's observations were extended after his death by the Rev. J. Field and others, leading up to Professor Haverfield's excavations at Long Wittenham in 1893, which he combined with a systematic catalogue of cropmark sites in the area, published in 1899.[17]

Haverfield provides a link with the great revival of field archaeology in the early 1900's, with Williams Freeman, Crawford and others, who were quick to appreciate the value of the overhead view in their work. The development of air photography provided such a view, and the cropmark phenomenon came into its own as a valuable weapon to the field archaeologist.

[14] Letter from John Collet of Newbury to Wood of Gresham College. 5.1.1744/5 B.M. addl.MS. 6212–26. Quoted from Boon, (1957).

[15] Colt Hoare, *Ancient Wiltshire*, Vol. II (1819) p. 25. I am indebted to Miss Judith Wilkins for this reference, and for correcting the proofs.

[16] Stone, ' Excavations at Standlake '. *Proc. Soc. Ant.*, 1st series, IV, 1857–9, pp. 99–100.

[17] Haverfield, 'Account of some Romano-British remains in the Upper Thames Valley '. *Proc. Soc. Ant.*, 2nd series, XVII, 1899–1900, pp. 10–16.

Some Megalithic Follies

by GLYN DANIEL

The Editor of ANTIQUITY, *stimulated by seeing the monument at Masham in Yorkshire for which the Ordnance Survey, with all its scholarship and restraint, can find no better word than ' Temple '; and by the sudden sight, while walking sane and sober up Lensfield Road in the city of Cambridge, of the representation of a megalithic monument on the new laboratory of Chemistry in the University, thought it might be interesting to collect together a few notes about megalithic follies. He hopes to obtain more information about the sites that he mentions, and to be told of others that are not included.*

THE late Editor and Founder of ANTIQUITY had to deal with a difficult monument when he wrote his *Long Barrows of the Cotswolds* (1925). This was the Three Shire Stones which stand in an alcove in the wall on the west side of the Foss Way, two miles north of Batheaston, at the junction of Somerset, Gloucestershire and Wiltshire and the parishes of Batheaston, Marshfield and Colerne. Here are three uprights supporting a capstone. Inside is a broken boundary stone bearing the date 1736, and on the 2-in. manuscript map of the district at the Ordnance Survey (dated 1813–14) there is a note saying ' Shire Stones, erected 1736 '.[1] As Crawford wrote, ' The present structure is evidently a modern imitation of a " dolmen ".' [2]

If we all accept the Three Shire Stones as an 18th-century ' dolmen ', as we must, it prompts us to wonder what other megalithic imitations or ' follies ' were constructed in England.

In 1792 Lord Arundel employed Josiah Lane to make a grotto for him at Wardour Castle in Wiltshire. Lane was a celebrated constructor of rock-work and his grotto at Wardour is a most remarkable and charming structure. To quote Barbara Jones's description of it: ' Built on a brick basis, it is of tufa and stone with the usual occasional ammonite, now covered with green moss and long ferns, for it is in a very sheltered and gloomy situation. The plan is most cunning, turning in and out with many views through jagged holes into other parts. The dark yews and the bank which it is built against, and the pattern-book construction, make it the most Gothic of grottoes.' [2] Apparently Josiah Lane in his rock-work used part of a chamber tomb on Place Farm, Tisbury: three stones from this tomb were removed in 1792 and used at Wardour Castle.[3]

In the very next parish to Wardour, at Fonthill, Beckford had an ' imitation cromlech ' in the grounds, but this, as his house and tower and most of the curiosities in the grounds, are almost entirely destroyed. In 1814 the fifteenth Earl of Shrewsbury began the construction of a house and landscape at Alton in Staffordshire; after his death in 1827 the work was carried on by his nephew. Among other oddities it contains what is often described as an imitation Stonehenge, but more descriptively as ' The Druid's Sideboard '. This is an

[1] O. G. S. Crawford, *The Long Barrows of the Cotswolds* (1925), p. 227.

[2] Barbara Jones, *Follies and Grottoes* (1953), p. 243.

[3] Lord Arundel and Colt Hoare, *History of Modern Wiltshire:* Hundred of Dunworth, p. 129–30. I am indebted to Mr Geoffrey Grigson for this reference. He writes: ' One monolith is still there, so the rock-work is a meeting place of Druids, Chinese gardeners and the Cumaean Sybil.'

extraordinary construction of piled stones and megalithic slabs; to quote Barbara Jones again, ' the folly builders have found the Druids'.[4]

But the strangest and finest mock-megalith in Britain is surely the ' temple ' on the Yorkshire moors at Ilton near Masham, of which two views are given here (PLATES XXXV (*c*) and XXXVI (*c*)). This was built in the 1820s by William Danby of Swinton Hall. He found the local people completely out of work and, wishing to help them, preferred to find them jobs rather than give them dole out of charity. He therefore got them to construct what he called a Druids' Temple and paid them each a shilling a day. The Masham Temple is a very remarkable structure with a grotto at the far end cut in the hillside, and several ' dolmens ' and trilithons built outside the main enclosure in the surrounding countryside. One of these amusing mock-dolmens is seen in PLATE XXXVI (*c*). It has been suggested from time to time that the Masham megaliths were rebuilt from, or partly from, existing prehistoric monuments, but there is no evidence to prove this, and indeed Yorkshire, apart from Boroughbridge and Rudstone, is not a megalithic county.[5]

It would now appear that Tibradden, in County Dublin, often acclaimed as a genuine Passage Grave, is in fact a 19th-century folly of a rather special kind. Before the excavation of the site by the National Monuments Branch of the Office of Public Works in Ireland, it was thought that the barrow on Tibradden Mountain contained a dry-walled Passage Grave of classic form, and that in the centre of the circular chamber there had been found, in 1849, a megalithic cist containing a food-vessel and cremated bones. Before the clearance work done by Mr Marcus O h-Eochaidhe three years ago the site had indeed the semblance of a filled-in Passage Grave, but now that it is open down to ground level this semblance is revealed as accidental. The whole construction of passage and chamber walls is uncharacteristic of the megalith builders, and around the inside of the chamber is a stone bench (PLATE XXXV (*a*) and (*b*)). The excavator is of the opinion that passage and chamber were built in the mid-19th century, and we may imagine visitors then sitting on the stone seat admiring the central cist.[6]

When the scaffolding in Lensfield Road, Cambridge, was removed last year to reveal the new Chemistry Laboratory there was seen the remarkable megalithic panel shown in PLATE XXXVI (*a*) and (*b*). It is decorated with the arms of the University of Cambridge and five chemical or alchemical symbols which, reading from left to right, mean *Talc*, *Iron*, *White Lead*, *Subacetate of Copper* (though this sign is indistinguishable from a prehistoric sun-disc ornament or a Chrismon sign), and *Precipitation*. Mr John Murray Easton, the architect, in a letter to the Editor, says: ' I am glad to know that you are interested . . . whether or not you approve of this " megalithic oddity ". It arose from the usual mixture of reasons. Some sort of panel in this position was indicated, for no windows were wanted there. . . . I have always been intrigued by the mysterious urge that compelled people to do what they did in megalithic times from Mycenae to the stone men of Malekula. . . . Then I have a liking for stones *qua* stones. I made a sketch which has been pretty well adhered to and gave a roving commission to Miss Spencer Watson to go and find suitable stones in the

[4] Barbara Jones, *op. cit.*, 120–1. The Park Place, Henley, monument should be mentioned here although it is not a folly. Originally the Mont de la Ville monument in Jersey it was moved to Henley in March 1788. See Jacquetta Hawkes, *The Archaeology of the Channel Islands:* II, *The Bailiwick of Jersey* (1939), p. 240.

[5] See Arnold Jowett's article on the Masham Temple in *Country Life*, 17 August, 1945. In this article he states that in the 19th century the Earl of Darnley ' carted the Sarsen stones of an entire cromlech to make a Merlin's Grotto in Cobham Park '. Is this so? Barbara Jones lists no folly of this kind. Information, please.

[6] *Proc. Preh. Soc.*, 1957, 221. A full report is in preparation. Meanwhile I have had the benefit of discussing this matter with Professor R. de Valera and Mr Liam de Paor.

Limestone belt. I wanted to get relief from the smoothness of brick and Portland stone by using these rough stones '.[7]

Of course it is not only the British Isles that can show megalithic oddities. The Church of Santa Cruz de la Victoria at Gangas-de-Onis near Oviedo is built on a chambered barrow and incorporates a Passage Grave which forms the crypt of the church; polygonal single chambers have been re-used as chapels at Alcobertas and Pavia in Portugal; and the Church of Les Septs Saints in the commune of Vieux-Marché, Lannion, Côtes du Nord in Brittany, has one transept built on top of a Gallery Grave which forms its crypt. The strangest megalithic monuments in France are at Confolens. On the island of Ste Marguerite, in the river Vienne, is a large capstone now supported by four columns of Romanesque design with 12th-century capitals. This monument was originally a rectangular single chamber which was turned into a Christian chapel. In the cemetery at Confolens is the re-erected Dolmen de Perissac which was bought for a hundred francs in 1892, and now has on top of it an extraordinary carved sarcophagus containing the remains of a lady much addicted to dolmens.[8]

Visitors to Meudon, between Paris and Versailles, will know the odd megalithic structure that can now be seen on the Meudon terrace. It is built out of the remains of a Gallery Grave found in the 1840s, moved in 1861 and turned into a pyramid, upset by the Germans in 1870 after the Franco-Prussian war, and then rebuilt into the present ' dolmen ' by a Monsieur Janssen after that war. A few miles away in the Cimetière des Essarts at Meudon is the reconstructed rectangular megalithic tomb that used to be the Dolmen de Kerhan in the Commune of St Philibert in the Morbihan. Dug by Gaillard in 1886, it was moved to Paris in 1896, and now forms the tomb of the family Piketty. A plaque on it commemorates the fact that since it was moved from Brittany it is still used as a collective tomb and that nine members of the Piketty family have been buried in the ground beneath it. It is difficult to know which is the most charming example of conscious megalithic antiquarianism—the Pikettys still burying in a Gallery Grave, Mr Murray Easton designing a megalithic panel for a Chemistry Laboratory, or the Welsh Gorsedd of Bards performing their annual rites at the stone circles which they have been building in different parts of Wales for many years.

[7] Mr Murray Easton co-operated very readily in telling me the history of the Chemistry panel, and I am grateful to him for his help and interest. In one of his interesting letters from which he has permitted me to quote, he says: ' I would like to have the chance of doing a free standing composition of " rude " stones.' Prevented as we are from doing what the *famille Piketty* did in France, those of us who wish for modern megalithic tombs may well, one day, satisfy Mr Murray Easton's desires. The symbols carved by Miss Spencer Watson were taken from *The Book of Signs*, the sixteenth book issued by the First Edition Club, in 1930, by Rudolf Koch (translated by Vyvyan Holland).

[8] See F. Burnand, ' Notes on French dolmens ', *The Reliquary*, July, 1896, p. 171.

Book Chronicle—*continued from p. 278*

A SHORT HISTORY OF SCIENTIFIC IDEAS TO 1900. *By* CHARLES SINGER. *pp.* xix, 525, 188 *text-figures and* 1 *plate. Oxford, the Clarendon Press*, 1959. 35*s*. There is not much about the development of archaeology and anthropology in this book and what there is inspires no confidence. Boucher de Perthes is alleged to be one of the founders of Anthropology, and is supposed to have clinched his view of the antiquity of man ' by discovering near Abbeville, in a Pleistocene deposit, a human jaw associated with worked flints'. One would have thought that all this talk of Piltdown Man and Rouffignac in the last few years would have reminded most scholars of the Moulin Quignon forgery.

[*continued on p.* 296.

Notes and News

'THE FIRST MEN': RECENT DISCOVERY IN EAST AFRICA

This was the title of the lecture given by Dr L. S. B. Leakey to the British Academy on 7 October, 1959. We are much indebted to Dr Kenneth Oakley, of the British Museum (Natural History) for obtaining the following summary, and for adding his own comments. Readers' attention is drawn also to illustrated accounts of this remarkable discovery in the Illustrated London News, 12 *September*, 1949, *and* 19 *September*, 1959, *and in* Nature, 4685, 491, (1959).

In 1931, during my first season's work at Olduvai Gorge, I found that Bed I, the lowest of the lacustrine deposits there, contained tools of a simple pre-Chellean culture which I subsequently named Oldowan after the Gorge.

This culture has now been recognized from Portugal to South Africa and right across the continent of Africa as the oldest well-defined Stone Age culture known to us, since most of what used to be called Kafuan has had to be abandoned as uncertain, and the balance clearly belongs to the Oldowan.

After publishing my monograph on the main sequence of cultures at Olduvai, we started more detailed work on certain sites.

During the period 1952–8 we concentrated upon living floors of the earliest stages of the Chellean culture and a preliminary report upon that appeared in *Nature* last year. We had excellent evidence that the earliest Chellean at the base of Bed II was a direct derivative of the Oldowan in Bed I, from which it could be distinguished only by the appearance of a very small proportion of simple but true hand-axes.

We found two human milk teeth with the Chellean which clearly showed from their size and proportions that the humans of this find had very large molar teeth and proportionately very small canines.

This year we decided to start detailed work on Bed I at Olduvai with a view to finding and exploring *actual* living floors—if they existed—of the makers of the most primitive Oldowan culture. Naturally we also hoped for some clue to the nature of the men who made this culture.

We therefore started to re-examine sites HWK, FLK and MK. It was at FLK in particular that the first tools of the Oldowan were found in 1931, although HWK had yielded many more specimens.

On 17 July my wife, working slowly up the slope of Bed I at FLK, found a fragment of human temporal bone; she followed slightly higher up and saw a tooth sticking out of the rock. She rushed to call me from the camp, where I was sick. We had found the makers of the Oldowan culture but we did not realize at once how much we had got.

As the temporal bone fragment was already down the slope, we first cleared and screened all the scree below the find, and we discovered some few pieces already washed away by erosion. Then we started to excavate and found we had a nearly complete skull, broken through the action of the bentonitic clay, but unwarped and beautifully preserved. It lay on a well-defined land surface which had been used *at that point* as a camp site by the makers of the Oldowan culture.

From this floor we recovered not only the skull (at the point where the floor was just being

exposed to the surface by erosion) but also Oldowan stone tools, a hammerstone and many waste flakes, as well as the bones of the animals upon which the men who occupied this camp site had fed. The animals on the living floor include birds, frogs, fish, lizards, rats and mice and the *young* of several of the giant large mammals of the period. The animal bones, unlike the human skull, had all been deliberately broken up.

As the skull, which is so nearly intact, was on this living floor where the animal bones were all broken up, we may assume that he was the owner of the camp site, *not* a victim.

The fauna of Olduvai is well known. Bed I has a fauna now recognized as appreciably older than Bed II and the same as Omo in Abyssinia. Bed II has a similar fauna, but with certain elements found in Bed I already missing, and new elements have appeared.

Bed I is now regarded as the upper part of the Villafranchian or upper half of the Lower Pleistocene and contemporary with Omo, Taung and Lower Sterkfontein. The fauna of Bed I (as well as Bed II) contains many giant forms; giant ostrich, giant antlered giraffe, giant pigs, giant wild sheep, giant wild cattle, giant hippopotamus and much else. The adults of these creatures were hunted during Bed II time by Chellean man, but the makers of the Oldowan culture were still not good hunters. They had only just emerged from a purely vegetarian diet and caught only small mammals, birds and reptiles and a few young creatures.

The new skull represents a true stone tool making man. In certain respects he resembles the ' near-men ' *Australopithecus* and *Paranthropus* from South Africa, and indeed I include him in the sub-family Australopithecinae for convenience, but in many ways the new skull is completely unlike the South African ' near-men ' and is much more like *Homo.*

I have named him *Zinjanthropus boisei.*

His resemblances with the South African genera include the reduced canines and incisors relative to the huge cheek teeth, the presence of a sagittal crest and some other features.

But it differs in very many ways. There is an entirely different form of *facial* architecture in the malar region. There is a strong nuchal crest; there are very large mastoids, and a wholly different type of tympanic plate on the lower wall of the ear. There are very large frontal sinuses. The facial length is enormous.

The total overall picture is one which shows a creature *morphologically* between the South African Australopithecinae and man, while as a stone tool-maker this new skull ranks as *man.*

As to the relative and actual age, the new skull belongs to the Upper Villafranchian and is thus contemporary with Taungs and Lower Sterkfontein, Swartkranz and Kromdraai.

It is also older, on modern views of the palaeontological evidence, than the earliest known members of *Pithecanthropus* group (*Meganthropus* from the Djetis beds in Java) and is therefore the oldest known stone tool-making man yet found.

The great importance of the discovery is that it gives us a skull which from the geological *age* and from the *morphological* point of view can lead direct to *Homo.*

Finally I have some special news. I was sure that the living floor, if further explored, would yield us the rest of the skeleton. Among the bones found during the last few days of the excavation before funds ran out was a tibia, which I have every reason to believe belongs to *Zinjanthropus.*

Dr Oakley adds:

I believe that Dr Leakey's demonstration at the British Academy in 1959 of the physical nature of the earliest tool-makers may prove to rank in importance with the acceptance at the Royal Society in 1859 of evidence of the geological antiquity of man. That this discovery of the ' first Men ' should have been made in Africa is remarkably appropriate to the year

of the Darwin Centenary, for it was Darwin who said that it was ' probable that Africa was formerly inhabited by extinct apes closely allied to the gorilla and chimpanzee; and as these two species are now man's nearest allies, it is somewhat more probable that our early progenitors lived on the African continent than elsewhere.'

It has been agreed by most physical anthropologists that the Australopithecines (known primarily through the discoveries in South Africa made by Professor Raymond Dart, the late Dr Robert Broom, and Dr John Robinson) lived in open country, walked upright and had teeth of a hominid pattern. However, as these ape-like creatures had brains not substantially larger than those of gorillas, the question of whether they could be counted as ' human ' or even as ' near-man ' has been vigorously contested. Their reduced canine teeth indicated that they were probably tool-users, but were they tool-*makers*? Dr and Mrs Leakey have now discovered an entire cranium which is accepted by all those who have examined it as unquestionably one of the Australopithecinae. It was found in circumstances which leave no reasonable doubt that it belonged to the maker of Oldowan pebble-tools. As these tools include standardized types representing a well-defined *tradition*, their makers must be counted as " human '—however bestial they may have looked.

There are other important facts regarding this remarkable discovery. The associated faunal remains indicate that the Oldowan tool-makers were semi-carnivorous. The geological dating of the finds is well established, for they were in a stratified deposit with fauna now recognized as Late Villafranchian (end of Lower Pleistocene, *c.* 500,000 years old). There is no undisputed evidence of any more ancient tool-making hominid elsewhere in the world.

There persists the doubt as to whether *all* Australopithecines were tool-makers, or only the most advanced ones. There will also be some dispute on whether the Oldowan tool-makers of Olduvai should be regarded as *generically* distinct or only *specifically* distinct from the Australopithecines described in South Africa by Dart, Broom and Robinson. It may also be argued by some that the Oldowan tool-makers were evolving in the direction of *Homo*; but argued by others that, although qualifying technically as ' human ', they were on one of the ' dead-end ' branches of the family Hominidae. But few, if any, will dispute that the Leakeys' discovery is likely to lead to an entire recrystallization of current ideas about the origin of man.

THE FOURTH PAN AFRICAN CONGRESS

The Fourth Pan African Congress on Prehistory took place at Leopoldville, in the Belgian Congo, during the third week in August, 1959. About fifty participating members attended, representing almost every country and colony in Africa as well as a number of European countries, the U.S.A. and even Venezuela. To one who had not attended the previous Congresses almost the most impressive thing that emerged from the meetings was the keen interest now being displayed in African Prehistory and Quaternary Geology by leading scientists from so many institutions both within and outside the continent. Even those actively engaged in research in the various corners of Africa could hardly have been aware of the impressive amount of fieldwork being undertaken each year by their colleagues in the continent and from overseas.

Papers submitted dealt with every aspect of the past from pebble tools to tin hats (stolen from an early British expedition to the Congo). Geology, climatology, palaeontology, palaeobotany, statistics, and a detailed study of present-day vegetation patterns, soil erosion and rainfall are all being used to bring order to the welter of facts and theories concerning the history of man in Africa.

It is hard, and indeed would be invidious, to attempt to rank one contribution above another in importance when so many excellent papers were read, but most members would, I think, agree that the retiring President, Dr L. S. B. Leakey, and his wife Mary ' stole the show ' with the announcement of their recent discovery at Olduvai of the skull of a pebble-tool-maker. This beautifully preserved fossil, known to the Congressists as ' dear boy ', and presented to the scientific world as *Zinjanthropus boisei*, is without doubt a most important and exciting discovery. As with all such crucial discoveries a controversy is bound to rage, and in this case it appears to be over the status of the fossil and its relationship to existing fossils, and in particular to the Australopithecines. The circumstances of the discovery led most people to agree that the creature was in fact the maker of the artifacts with which it was associated rather than the victim of some higher form of hominid. But there was almost unanimous opposition to the creation of a new genus for the fossil: most authorities agreed that it shared so much in common with the Australopithecines, that it should, in fact, be grouped with them as a new species. We shall await with great interest a definitive report on the relationship of this fossil to the Australopithecines, as this will have an important bearing on the question as to whether or not *Australopithecus* could have made the pebble tools found at Sterkfontein. In this respect too the absolute and relative dating of the fossil will be most important; it is good to know that a potassium argon date is now in preparation for bed I at Olduvai in which the new fossil was found. The tools so far associated with *Zinjanthropus* are of normal Oldowan type with the exception of one extraordinary piece in quartz which could well have passed for a Middle Stone Age biconical core!

On the climatological side Dr Bernhard created a considerable stir by presenting in the opening paper of the Congress a new theory concerning pluvials in Africa. The full significance of the paper can be appreciated only when it can be studied in detail in its final published form. In outline it is an attempt to apply the theory of solar radiation to tropical regions as distinct from higher latitudes. The most important conclusion, however, is that ' pluvials ' are much more likely to equate with interglacials in the higher latitudes than with glacials. The introduction of the terms *isopluvial* for increased rainfall distributed throughout the years, and *displuvial* for increased seasonal rainfall, were well received since it has for some time now been appreciated that if pluvials really did exist then their nature, and therefore their effect on environment and Pleistocene geology, is likely to have been very different in different parts of the continent.

No one would dispute the fact that since the first appearance of man in Africa the climate generally has undergone a number of changes, and these changes must to some extent have affected the type of rock and soil weathering taking place, and the nature of deposits formed in river valleys and closed basins. The geologists, however, left us in no doubt that the climatic interpretation of such deposits has, to date, left much to be desired, and the correlation of deposits from one area to another even more. Although the present system of pluvials and interpluvials was not actually rejected it was clearly labelled illegitimate, and there is no doubt that until more work has been done more cautious workers will tend to use the terms Kageran, Kamasian, Kanjeran, Gamblian less and less, and content themselves with using the less committal terms Lower, Middle and Upper Pleistocene. The importance of geological studies to the prehistorian, and the latter's appreciation of the contribution being made to his subject by geologists, is demonstrated by the unanimous decision that the Congress should in future be called the ' Pan African Congress on Prehistory and Quaternary Geology '. A number of resolutions were passed seeking to establish closer co-operation between geologists and prehistorians and to establish a more positive and active investigation of Quaternary deposits in Africa.

At the other end of the scale a considerable number of papers were read on various aspects of the metal age in Africa, and it is clear that the ' reawakening ' of Africa is resulting in a keen interest in the more recent past, and a genuine attempt through the medium of archaeology to unravel the unrecorded history of the existing negroid populations. While this is of less interest and relevance to the study of man outside the continent there is no doubt that to the emerging African states it is a study of the first importance. Certainly in the past it has been a most neglected field of study, and one hopes that the spate of work now being undertaken will lead to a better understanding of the African and that this in turn will make some contribution towards solving some of the problems of coexistence in the continent between European and African.

The excursions to the Eastern and Lower Congo, before and after the sessions respectively, were acclaimed a great success and did much to clarify the notions of those taking part on matters of geography, geology and Stone Age stratigraphy. It was most instructive to learn that our schoolboy notions of the Congo being a vast steaming jungle were quite mistaken and that much of the Lower Congo is gently rolling grassland!

Finally, our thanks and congratulations must be expressed to Professor G. Mortelmans and his colleagues for organizing a most valuable and enjoyable Pan African Congress, and to the Government of Belgium for the financial support without which the Congress would not have been possible.

RAY INSKEEP

THE RADIO-CARBON DATING OF THE NUTBANE LONG BARROW

The radio-carbon dating measurement of burnt wood from the Nutbane Long Barrow, excavated in 1957 and published in ANTIQUITY, VOL. XXXII (1958), and in *PPS*, Vol. XXV (1959), has recently been completed by the British Museum Research Laboratory. The wood came from the remains of the oak posts of the second forecourt building, belonging to the third phase of structures within the east end of the mound. The second forecourt was purposely burnt during the later construction of the covering mound, and the posts smouldered gradually down into their sockets, leaving large quantities of charcoal in the post trenches. This charcoal has given the satisfactory and interesting Carbon-14 date of 2721 ± 150 B.C., a date which, in view of the fact that Windmill Hill pottery was found in a primary position and contemporary with the structures, must assign our Windmill Hill cultures to a rather earlier position than that in which we have been accustomed to place them.

FAITH DE MALLET VATCHER

THE RADIO-CARBON DATE FROM DURRINGTON WALLS

During the 1952 excavations on the settlement site adjacent to the south bank of the Durrington Walls Henge Monument, a well-preserved mass of wood charcoal was found on the old land surface beneath the chalk rubble mound of the Henge. The position is shown in *Ant. Journ.*, XXXIV (1954), 163, fig. 4, marked ' charcoal ' in Cutting III. The charcoal was fresh and crisp, and must have been covered by the bank immediately after its deposition. Two radio-carbon tests on a sample from this charcoal were made by Professor de Vries of Groningen in 1955–6, and the results were: 4575 ± 40 and 4585 ± 70 before present, thus indicating a date of *c.* 2620–2630 B.C. for the charcoal, and so for the construction of the Henge of Durrington Walls.

This date is archaeologically inacceptable for the following reasons. The evidence observed during the excavation makes it virtually impossible to regard the charcoal and the bank of the Henge as anything but contemporary. The 1950–2 excavations on the site

showed that in archaeological terms the Henge must be contemporary with the occupation material of Secondary Neolithic (Woodhenge) type which underlies the North Bank of the Henge, and overlaps the tail of the South Bank (*loc. cit.*, 168). Two small scraps of Beaker ware were found with the occupation material at Durrington, in addition to the abundant pottery of Woodhenge type; at Woodhenge itself, Beaker pottery (Abercromby's Type B) was again contemporary with the occupation material from the site.

The Durrington Walls charcoal then should be contemporary with Beakers in Wiltshire, both on account of the occurrence of actual Beaker sherds, and because the finger-pinched or rusticated ornament of much of the Woodhenge pottery can hardly be dissociated from the similar ornament on British beakers of the Somersham and allied types, and their Continental prototypes, the ' Pot Beakers ' and ' Giant Beakers ', or that on the lower part of some Veluwe Beakers in Holland, themselves contemporary with Pot Beakers. Certain absolute dates in the Dutch Beaker sequence have been provided by radio-carbon tests in the Groningen Laboratory, and a date of 1980 ± 70 is given to a Bell Beaker of the type which stands in an ancestral position to much of our British Beaker pottery; 1685 ± 50 for a ' Zigzag ' ornamented Beaker; the Veluwe phase is placed between 1700 and 1500 B.C. If one accepts these dates (and they are in accordance with chronologies constructed by archaeological means), we cannot accept the Durrington Walls radio-carbon date, which is roughly a millennium too high!

STUART PIGGOTT

TERMITES AND SOIL-STRATIFICATION IN EQUATORIAL AFRICA

A recent excavation at Legon Botanic Gardens, Ghana, gave the opportunity to evaluate disturbance caused by termites. The stratification and chronological interpretation, averaged over twenty pits, was as follows:

Country: parkland savannah which would become marginal forest with a slight increase of rainfall. Many nests of *Macrotermes bellicosus*, which reach a height of eight feet and a size of forty cubic feet.

Soil: red sandy clay without lateritic concretions in situ.

9–12 in.	Early iron-age with occasional older material	
12–24 in.	Abundant end-mesolithic	Sub-pluvial III
24–36 in.	Red earth; mesolithic peters out in depth	
36–40 in.	Erosion-surface; many rolled lateritic nodules	Post-pluvial III
40–60 in.	Red earth; degenerate M.S.A. near top, in some pits a further concentration of it about 52 in.	Sub-pluvial II
60–65 in.	Large stones and laterite nodules; erosion-surface. Late M.S.A.	Post-pluvial I-II
65–75 in.	Red earth; a few stones	Gamblian, rather disturbed
75–79 in.	Large stones on rock. A few Sangoan pieces	Beginning of Gamblian

Above the upper erosion-surface red-brown stains could be detected as excavation proceeded and were dug out separately; they were due to insect-nests, burrows, roots and fallen tree-boles. Below 40 in. the only stains were two due to fallen boles and one at 51 in. which seemed to be the silhouette of a human body. Consequently all save the largest patches of discoloration earlier than Post-pluvial III had disappeared.

Small sherds occurred rarely down to 24 in.; so the maximum range of sinking during not more than ten centuries was one foot. As there was no charcoal lower than this, it was felt that no material of reliable age could be collected for a carbon-test. The end-mesolithic can be dated at Takoradi to the post-Dunkirkian regression; though the age of this has not been clearly established in Europe, it may be said that under humid equatorial conditions all charcoal has oxydized in probably less than 3000 years.

The mesolithic occupied a zone about eighteen inches thick. There were extremely few pieces below 30 in. It was probably deposited on a surface from 20 in. upwards, so its range of vertical movement has been about one foot. The erosion-surface at 36–40 in. varied in thickness; in some pits there were very many lateritic nodules which must have washed down the hill during an arid period. Its base was clear-cut and there were few nodules below. At lower levels the divisions were less definite, except for the top of the stones at 60 in. Vertical intervals were in general smaller than the range of movement established for the mesolithic. In pits with no marked concentration at 52 in. artifacts petered out between 52 and 60 in.

It thus appears that under such tropical conditions the stratification of soil-surfaces is reliable provided there is 12–18 in. between each surface, and even very small artifacts do not move more vertically. Large soil-disturbances can be detected as far back as early holocene times. Termites, although they transport much earth, do not upset the stratification materially. Their nests undoubtedly, as they disintegrate, cause a fairly rapid superficial build-up. At the base of the nest calcareous concretions form, which dissolve again as the nest is levelled. But termites do not quarry earth in such a way as to cause markedly uneven sinking and grave warping of deeper levels. It is believed that they obtain most of the earth for their mounds not from the subsoil but from in and just above the rock; they may have been responsible for the disturbances below 60 in. in the Legon pits; but super-incumbent soil-levels are evenly compacted.

O. Davies

ARCHAEOLOGY IN BELGIUM

We are indebted to Professor S. J. De Laet for the following three items of archaeological news from Belgium.

(1) A new Direction of Excavations (*Service des Fouilles*) was announced by a Royal Decree on 29 March, 1958. This replaces the existing *Services des Fouilles* of the Brussels Museum, which undertook excavations solely for the benefit of the Museum, but was nevertheless, until now, the only such body in Belgium. The new *Service des Fouilles*, under the auspices of the *Institut royal du Patrimoine Artistique*, is to be a truly national service, which will concern itself with all museums and the problems of all archaeological institutions. The staff is as yet small, but there is every hope that this will be increased sufficiently to meet all demands. The same Royal decree envisaged the formation of a *Commission nationale des Fouilles* with several functions. It would organize the distribution of material from the excavations undertaken by the new *Service des Fouilles* among various museums; it would draw up a systematic plan of excavation directed towards the solving of specific historical problems on which archaeology may throw light, and in addition it would initiate legislation to control excavation and to protect archaeological sites. The director of this new service is *Dr H. Roosens, Institut du Patrimoine Artistique, Service des Fouilles, Parc du Cinquantenaire* 10, *Brussels.*

(2) 1959 in Belgium has seen the establishment of a new National Centre for Archaeological Research, whose members will include the Professors of Archaeology from the four

Belgian Universities, representatives of the State Museums, and of the various disciplines concerned with archaeology (such as history, toponomy, geology, anthropology, scientific laboratory work). Government subsidies will allow the centre to enrol the services of young research workers, and these will be given two duties. First, to compile as accurate a record as possible of all archaeological material found in Belgium from the beginning of archaeological discovery. Secondly, to prepare, with the help of specialists in kindred studies, a careful and comprehensive programme for archaeological research in Belgium. The *Conseil d'Administration du Centre National de Recherches Archéologiques en Belgique* consists of S. J. De Laet (President), H. Roosens (Director), H. Danthine, J. Mertens, F. Twiesselmann and M. Vanden Stock.

(3) The third piece of news is that of the founding of a new archaeological journal. The Professors at the Universities of Liège, Ghent, Amsterdam and Groningen have decided to publish in 1960 a periodical devoted to the archaeology of Belgium, Holland and Luxembourg. It will be called *Helinium* (the ancient Latin name for the delta of the Escaut, Meuse and Rhine) and will publish contributions in French, Dutch, English and German; it will include reviews, book chronicles, and notes and news, and will aim to keep the foreigner abreast of the main archaeological developments in the Benelux countries from the Palaeolithic through to the Carolingian periods. The editorial committee is Professor H. Danthine (Liège), S. J. De Laet (Ghent), W. Glasbergen (Amsterdam), and H. T. Waterbolk (Groningen). All luck to *Helinium*. Contributions should be addressed to Professor H. T. Waterbolk, *Poststrasse* 6, *Groningen*.

AMBER SPACER-BEADS AGAIN

The following note has been occasioned by an article which appeared recently, on the subject of Bronze Age amber spacer-beads, by Dr Rolf Hachmann.[1] In this most valuable and important article, as well as in a longer study which appeared the same year,[2] Dr Hachmann has emphasized fresh perplexities in the old ' spacer problem ', due to the publication of amber beads with complex borings from the new or ' B ' circle of shaft-graves at Mycenae. These spacers are quite as like those of Central and Western Europe as the beads from Kakovatos, which von Merhart had used to give terminus dates to the ' Tumulus Bronze Age'.[3] The ' B ' circle graves are thought by Prof. Mylonas to run from about 1650 to 1550, including an overlap with the old shaft-graves of Schliemann's circle, of about fifty years.[4] Such dates can be only very approximately accurate, but at least they give the general context of the finds which, relative to Tholos A at Kakovatos (L.H. II A, 1500–1450 according to Furumark), are appreciably earlier. If the arguments used by von Merhart in 1940 were still to apply, the middle phase of the German Tumulus Culture (to which the spacers belong), is thrown back into a far earlier period than is acceptable to German archaeologists.[5]

In his article Dr Hachmann has reduced the difficulties by pointing out the greater similarity which exists between British and Greek amber spacers with complex borings on the one hand, and those from Germany on the other (also noticed by Milojčić[6]). The German spacers can therefore fall out of the argument for direct contacts with the Aegean,

[1] ' Bronzezeitliche Bernsteinschieber ', *Bayrische Vorgeschichtsblätter*, **22**, 1957, 1–36.
[2] R. Hachmann, *Frühe Bronzezeit im Westlichen Ostseegebiet* (Hamburg, 1957), 174–80.
[3] V. Milojčić, *Germania* **33** (1955), 316–19; G. von Merhart, *Germania*, **24** (1940), 99–102.
[4] G. Mylonas, *Ancient Mycenae* (1957), 181.
[5] Hachmann, *Bay. Vor.* (1957), 20.
[6] *Germania* (1955), 318–9.

with the chronological complications which ensue from it. The further problem of the invention of the spacers in the first place, and of their peculiar and limited distribution, remains unresolved. The existence of amber spacers with simple straight borings, in similar contexts, may confuse rather than clarify the question. They occur far outside the limited bounds of the complex beads, both in time and place, stretching from Neolithic Denmark to 7th-century Crete, and beyond. If the inclusion of these beads increases the difficulty, it is possible that better progress may be made by a further contraction of the material.

It is necessary to say at once that I have no new solution to offer here, but Dr Hachmann's excellent illustrations suggest one or two points which may be worth considering at this stage, particularly since a study of British beads is to appear before long. Both simple and complex spacers are illustrated and discussed *together* in the article. I shall only be concerned with the complex spacers.[7] They come from the British Isles, Alsace, Hesse, Darmstadt, Württemberg, Bavaria and mainland Greece. A further subdivision can be made by taking one pattern of boring which occurs with greater regularity than others, as well as being itself more logical and symmetrical.[8] Essentially it consists of a row of parallel straight borings interspersed with V-borings. The list now obtained is the following (the numbers are Hachmann's):

(2) Knowes of Trotty, Orkney.
(6) Oakley Down, Wessex Culture.
(7) Upton Lovell, Wessex Culture.
(8) Kakovatos, Tholos A, Greece.
(10) Mycenae, Grave Circle B, Omicron Grave, Greece.
(34) Hundersingen-Weidenhang, Grave 14, Württemberg.
(35) Mehrstetten, Tumulus 6, Grave 3, Württemberg.
(36) Melchingen-Hakenrain, Tumulus, Württemberg.
(39) Upflamör-Lautrieb, Tumulus 11, Grave 5, Württemberg.
(40) Wilsingen-Stockäcker, Tumulus 5, Grave 2, Württemberg.
(51) Koblach, settlement, Vorarlberg, Austria.

This list shows that spacers with the ' basic pattern ' exist in the British Isles (three, provisional number), Greece (two), Württemberg (five), and Austria (one). There are apparently none from Alsace, Hesse, Darmstadt or Bavaria, where other types of complex spacer are found.

Dr Hachmann lays considerable stress on the important evidences of re-use, as shown by the large spacer from Kakovatos, with its single central transverse boring, from which it appears that at some time this bead was worn as a pendant. A large number of the surviving beads from Germany are merely fragments and show signs of reworking; and the cases are few where the arrangement of the necklace, as originally worn, can be reconstructed. If we turn to continental Europe, in pursuit of the beads with ' basic pattern ', then Bavaria, Hesse, and Darmstadt in Germany, and Alsace in France, are all eliminated and we are left with Württemberg and the single bead from Austria. This is dated within the Middle Bronze age, without further particulars. Of the five beads from Württemberg only one, Upflamör-Lautrieb (39) comes from a grave which is specifically late in the ' Tumulus Bronze Age ' according to Hachmann (that is, Reinecke D). It is a part of a bead only, and

[7] In Hachmann's list they are numbered: 2, 5–8, 10, 11, 17, 19, 20, 22, 23, 34–36, 39–42, 45, 51.

[8] The proportions are, 11 of the selected ' basic pattern ' against 13 of all others, taken from Hachmann's illustrations, along with those published by the writer in *Bronze Age Cultures in France*, 1957, fig. 16, and based on information from Prof. Piggott.

in the same grave with it there was another fragment, obviously re-used, and with a different and more haphazard boring.[9] There was also a segmented bead of uncertain material. Of the other Württemberg sites, Hundersingen-Weidenhang (34) is dated by Hachmann in the mid-Tumulus Bronze Age. This again has a fragment of bead found with another re-used one, while the Wilsingen-Stockäcker (40) burial may be the same date, but has only very small fragments. Of the remaining two, Mehrstetten (35) is undated, and Melchingen-Hakenrain (36) is a single find. Thus in the Alb amber spacers with the basic pattern are found, along with beads with secondary borings and degenerate appearance, in graves which date from either midway or late in the ' Tumulus Bronze Age '. It is unnecessary, as well as impracticable to try and date them back into the 17th or 16th century by reference to the new shaft-graves at Mycenae.

We are much in Dr Hachmann's debt for making this so evident. The problem, however, remains on our hands, of how the complex spacers came to be made in the first place, and of how they got into South German and Alsatian graves of the Middle Bronze Age. Simple as the idea is, once it has arisen, yet its very rarity argues against independent invention. At some point in space and time there must be a link between these dispersed groups of objects.

If we return to the basic pattern, this is essentially the simple straight-bored spacer, combined with, and elaborated by, the technique of the V-bored bead or ' button .'[10] To follow these two elements would lead far afield and lies outside the scope of this short note. It is sufficient to remember that composite necklaces with spacers of various materials, lapis lazuli, faience, stone and bone, were worn in the Near East from Ur to Byblos, as also in most of Europe. The European necklaces are rough and distant reflections of oriental prototypes. There are faïence spacers in the shaft-graves at Mycenae, but no evidence of how the many small beads found with them were strung together. An amber spacer was sufficiently rare to be misunderstood, set in gold, and hung as a pendant, to be found in a 7th-century tomb at Knossos.[11] V-borings are not found at Mycenae, and are quite exceptional in the Levant. In Europe, on the other hand, V-bored beads or buttons are far more numerous than spacers and are known from North Russia to the British Isles. Amber beads from the Baltic often have a pitted ornament which stems from the native Mesolithic tradition.[12] In Western and Central Europe the V-bored beads come from Late Megalithic and Early Bronze Age contexts, including the Wessex Culture.[13]

I do not think a solution of the problem is yet possible, but now that Dr Hachmann has successfully disposed of one chronological red-herring we can view this as a two-fold problem, the first part of which concerns the place and time of the invention of the spacers with the basic pattern. Here I suggest that it should be looked for within an area, and at a time when both the simple-bored spacers and V-bored beads were being manufactured (the technique of manufacture is more important than the material used). The second part of the problem, which must be related to the first, concerns the survival of complex spacers into the middle phase of the ' Tumulus Bronze Age ' of Southern Germany.

[9] Hachmann, *Bay. Vor.*, 1957, fig. 11, 21 and 15.

[10] The importance of the ordinary V-bored bead to the problem of the complex spacers had occurred independently to Mr T. G. E. Powell, with whom I have had useful discussions of this matter since.

[11] ' The Khaniale Tekke Tholos ', *BSA*, XLIX (1954), 212, 226, pl. 28, 51.

[12] C. Becker, *Acta Archaeologia*, **25** (1954), 241–52, see particularly figs. 3 and 5; M. Gimbutas, *The Prehistory of Eastern Europe* (1956), pl. 26, an amber ' wristguard ' or plaque with a row of V-borings from Juodkramte, Lithuania, also Zlota graves, pls. 36, 37, Poland.

[13] J. Arnal, *BSPF*, LI (1954), 255–68; S. Piggott, *PPS*, N.S. IV, pt. 1 (1938), 52–106, fig. 12, 5; the number and varieties are great.

Among these later beads there may be several smaller groupings. The Alsatian group, for instance, seems to stand closest to South Bavaria. None of the Alsatian beads is basic patterned, and all are late, though not, I think, quite as late as Dr Hachmann would have them when he calls them ' Reinecke " D " '.[14] Beads from Oberfeld 53–vi and Oberstritten are like those of Asenkofen B in South Bavaria, while Dachshübel-Birklach 17–1 and Brunnbachmatt, Haguenau, can be compared with a, possibly unfinished, bead from Asenkofen E.[15] These Bavarian graves are probably Reinecke B2. Most of these beads have an irregular haphazard appearance. The Württemberg group has survivors of basic-pattern spacers, along with degenerate and re-used beads. This group may provide, therefore, the link between the two related problems; but the Austrian bead is a reminder of how many gaps exist, and how easily new factors may still arise to alter the terms of a problem which is based on a very restricted distribution.

N. K. Sandars

[14] Sandars, *Bronze Age Cultures*, 72–4, fig. 16.
[15] cf. Hachmann, *Bay. Vor.* (1957), fig. 7, 18, 30 and fig. 6, 11.

GERMAN ARCHAEOLOGY ABROAD

Germany, the Magazine of the Federal Republic, edited by Georg Romberg, has an interesting account of German archaeological work abroad in the twelve years since the end of the war (*Germany*, 1959, 36). The branch institutes outside Germany of the German Archaeological Institute (which itself dates back to 1829) have been restarted at Rome, Athens, Istanbul, Madrid, Cairo and Baghdad. Today a total of eighteen sites abroad are being worked at; most of the work is financed by the German Archaeological Institute, which is partly supported in these undertakings by the Government, the German Orient Society and other institutions. In Greece there are excavations at Olympia, Kerameikos Athens, Thebes, prehistoric settlements in Thessaly and at the Hera Temple on the south coast of Samos. In Turkey work is going on at Milet, at Pergamon, at a Greek theatre at Camli between Ephesus and Priene, in the city of Arsemeia in the Central Taurus Mountains, and in the Büyükkale Castle at Bogazkoy. Excavation has been resumed at Uruk-Warka (which with Olympia and Pergamon had been the traditional preserve of German archaeologists) and in Northern Mesopotamia. An early Christian church has been excavated at Resafa in Syria, and the dam area south of Assuan investigated by the Cairo branch. In Italy work has proceeded in city settlements at Cape Palinuro and Rusellae; in Spain a Roman sanctuary has been excavated at Castillo de Mulva, and early Christian buildings at Censcelles, near Tarragona.

MEDITERRANEAN SCHOLARSHIP, 1960

The Society for Hellenic Travel is sponsoring an archaeological cruise to the Eastern Mediterranean from 7 to 23 April, 1960, which will visit, among other places, Delphi, Samos, Rhodes, Beirut, Baalbek, Byblos, Petra, Crete and Athens, and is again offering one free place for a student member interested in the history, archaeology or art of the Mediterranean. This scholarship will provide free travel, accommodation and all meals and excursions from London back to London. It is intended for men and women between the ages of 16 and 21 who are in the sixth forms of schools or the first year of their university studies, or who are suspended between school and university by reason of military or other special service. It will be awarded on the basis of an essay submitted by 15 February, 1960, which should be not less than 3000 words and not more than 7000 words and should deal with any aspect of the history, archaeology or art of the Mediterranean area before A.D. 1453. The

essay should be typewritten (or written in a clear and legible hand) and may be illustrated with photographs, diagrams and drawings. It should not have been published previously and should be accompanied by a certificate from a schoolmaster or tutor attesting that it is the *bona fide* work of the entrant. The successful candidate, or two or more candidates who have been short-listed, may be invited to attend an interview in London. The essays will be judged by a panel under the chairmanship of Dr Glyn Daniel, in consultation with the President and other Vice-Presidents of the Society, and their decision will be final. For further information apply to *Miss M. W. McCall, Secretary, Society for Hellenic Travel, 4 Argyll Mansions, Chichele Road, London, N.W.2.*

GLASS

For many years there has been a growing need for recording discoveries, acquisitions and publications which affect the art and history of glassmaking. In order to meet this insufficiency the Corning Museum of Glass (Corning, New York) has initiated a publication entitled the *Journal of Glass Studies*. The first number was published in April 1959 and contains, in addition to original articles, an illustrated record of approximately fifty major glass acquisitions by museums and private collectors throughout the world in the last few years, and a check-list of 350 recently published articles and books on glass 1956–8. The articles include Gladys Weinberg on ' Glass Manufacture in Ancient Crete ', A. H. S. Megaw on ' A Twelfth Century Scent-Bottle from Cyprus ', K. Yamasaki's ' Introductory Notes on the Ancient Glass of Japan ', and R. J. Charleston's ' Souvenirs of the Grand Tour '. We welcome this new journal and wish it success. It can be obtained from *The Museum, Corning Glass Center, Corning, New York*, price $5.

Book Chronicle–*continued from p.* 284

EINFUHRUNG IN DIE VORGESCHICHTE. *By* H. J. Eggers. *pp.* 318, 30 *text figures. Munich, Piper and Co. D.M.* 11.50. A fascinating account of the development of archaeology in Germany and of the methods of North European archaeology. Indispensable to anyone interested in the history of archaeology and the basis of German archaeological technique. Amusing to readers with a wider perspective who will notice, with justified surprise, that the book has no mention of Crawford, Childe, Vaufrey, Lantier, Schaeffer, Wheeler and Fox. Where is now the *Ultima Thule* of Europe ?

DAS FRUHE INDIEN. *By* Heinz Mode. *p.* 150, 96 *plates, (two in colour),* 52 *text-figures,* 3 *maps. Stuttgart, Gustav Kilpper Verlag,* 1959. *D.M.* 24·50. Volume V of the new series of *Grosse Kulturen der Fruhzeit.*

THE BLACKFENS. *By* A. K. Astbury. *pp.* 217, 55 *plates, 5 text figures, one folding map. Cambridge, The Golden Head Press,* 1958. 42*s.* Describes the Black Fens of the Isle of Ely and neighbouring counties, and studies particularly artificial waterways and Roman canals.

HISTORICAL ATLAS AND GAZETTEER. *By* Arnold Toynbee and Edward D. Myers. *pp.* 257 *including* 73 *maps. Published for the Royal Institute of International Affairs by the Oxford University Press, London,* 1959, 35*s.* This is volume XI of Toynbee's *A Study of History* and contains a gazetteer of all place-names mentioned in Volumes I—X, an Atlas of maps covering the subject matter of the study and an index of place-names in the Atlas.

Reviews

PECOS, NEW MEXICO: ARCHAEOLOGICAL NOTES. *By* Alfred Vincent Kidder. pp. xviii + 376, 72 *figures* (*some in line, some in photogravure*). *Papers of the R. S. Peabody Foundation for Archaeology, Andover, Mass.*, 1958. $7.50.

Dr Kidder's work in the Southwest of the United States, notably at Pecos, is well known, and his *An Introduction to the Study of Southwestern Archaeology with a Preliminary Account of the Excavations at Pecos*, published by the R. S. Peabody Foundation in 1924, was to many of us the textbook which introduced us to the archaeology of the Southwest. In later years he published detailed reports on the pottery and other artifacts of Pecos, but in 1929 he joined the Carnegie Institution of Washington and went to do the work in the Maya field for which he is renowned. This prevented him from completing the publication of the architecture, burials and some other features, and he now says that he will never be able to report on them fully, although his notes and material are available for study in appropriate places.

The present publication partly fills the gap by describing some of the more important features of his unpublished work. There are notes on an earlier site in the Pecos Valley and a general description of Pecos itself, a long account of the kivas with comparisons with modern examples, and a description of the burials. At the end Kidder muses on a number of topics, particularly on the causes of the decline and final abandonment of Pecos in 1838, after an occupation of some 500 years. Among many good things is a summing-up of one of the results of his life's experience by this veteran and, it may be added, beloved figure in American archaeology—' But at that time its ceramic tail was beginning to wag the archaeological dog. . . . Far be it from me to decry the value of pottery to the archaeologist. . . . But pottery was never more than a minor art. It can tell far less of the social and religious life of a pre-literate people than can their dwellings, their ceremonial structures and paraphernalia, or the products of the higher arts.'

G. H. S. Bushnell

MANUEL D'ARCHÉOLOGIE GALLO-ROMAINE. *By* Albert Grenier. Part III. L'Architecture: 1. L'Urbanisme, les Monuments; 2. Ludi et Circenses. *Picard, Paris*, 1958. *pp.* 1026, 324 *figures* (*including numerous plans*). *Price* 3000 *francs.*

The great *Manuel d'Archéologie préhistorique, celtique et gallo-romaine* conceived by Joseph Déchelette pursues its way. ' This work ', wrote Déchelette in 1908 when he launched the first volume, ' has for its object the study of the antiquities of Gaul from the appearance of man until the fall of the Roman Empire.' A second volume appeared in 1914, and before the end of the year its brilliant author, having insisted on going to the war despite his fifty-two years, had been killed on the Aisne. At the end of the war M. Albert Grenier shouldered the task of preparing the Roman section, and two parts of this appeared respectively in 1931 and 1934. Now, after twenty-four years and another world war, we welcome a new volume.

The years since 1934 have seen great advances in the knowledge of Roman Gaul. During the Vichy period many Frenchmen, frustrated in their national life, turned with relief to the study of their remote past. They overhauled their archaeological organization, reforming their antiquities laws. M. Grenier has been closely associated with the administration of the new system and with the production of the journal *Gallia*, and is thus in a key position to survey the field.

The outstanding value of the *Manuel* for foreigners is that scholars who have not the time or the facilities to keep pace with the mass of recent French publications can now see where Gallo-Roman studies stand, what are their achievements and what are their gaps. To give an adequate picture of such a mass of detail is a difficult task. ' Un Manuel,' says M. Grenier, ' ne représente, en effet, qu'un état provisoire et forcément incomplet . . . il donne des points de départ et fournit quelques éléments de comparaison.'

The volume begins with general information on classical architecture and an explanation of its technical terms and of the building techniques found in Gaul. Then, after a discussion of the significance of the Roman town system in Gaul, the lay-out of a selected number of the more important towns is described. The section on Narbonne, a town about which it has been singularly difficult for a foreigner to find information, is specially welcome; so are those on Fréjus, Aix, Orange and Lyon. Town walls are only dealt with from the topographical point of view. A comparison of the plans given with those in the 1931 and 1934 volumes will show that a lot more is now known about the towns, but we still await a revised account of the walls, especially of those of the Later Empire on which so much recent work has been done.

The town plan of Nimes is becoming clearer; so is that of Arles. The topography of Arles is intimately bound up with its town walls, and these are briefly discussed, Benoit's plan from the *Forma Orbis Romani*, fasc. V, 1938, being reproduced opposite page 158. The piece of early town wall found under the amphitheatre and shown in a plan with Benoit's article in the *Comptes Rendus de l'Académie des Inscriptions*, 1941, p. 97, is not mentioned at this point, but on p. 632. It would seem that when the amphitheatre was built a new section of town wall had to be constructed to enclose it on the north. What happened to the fortifications north and north-west of the amphitheatre is still not clear.

M. Grenier has perforce had to limit himself to certain classes of monuments and has chosen capitoliums, forums, temples and basilicas. Along with the forums go the various ' *cryptoportici* ', and it is very useful to have a review of these and the conclusion, which seems justifiable, that their main use was for storage.

Of temples, the large structure beside the theatre at Orange is of considerable interest, and so are the numerous Celtic temples. It is satisfactory to have plans and illustrations of the circular temple at Périgueux and of the square ' Temple of Janus ' at Autun. A notable addition to the series is the site of the Moulin de Fâ, near Royan, an old mill built on the podium of a circular temple, excavated in 1935–9 and 1956.

Gaul, as might be expected, has basilicas of superlative interest, culminating with the imperial and Christian basilicas of Trier on which so much work has been done in recent years and of which there is here a summary. There is a short discussion of the take-over by the Christians of the basilica for their church architecture. M. Grenier is in favour of the view that the link is the funerary basilica: the reader may like to compare this with Ward-Perkins's article on the subject in *Papers of the British School at Rome*, vol. XXII, 1954.

The section on *Ludi et Circenses* opens with a summary of the classical sources of information about amphitheatres, theatres and what went on in them. Intriguing things like the mechanism of the theatre curtain are described; it would have been helpful to have a good diagram showing exactly how this worked. The remains of more than thirty amphitheatres and nearly as many theatres, in addition to over twenty theatre-amphitheatres of Celtic type, classified as (*a*) theatres derived from amphitheatres, and (*b*) amphitheatres derived from theatres, are described.

Of circuses, remains are, not surprisingly, few and far between, though there can be no doubt that the Gauls shared the universal passion for chariot-racing. The circuses of Arles and Trier are known in outline, and there is the obelisk monument at Vienne.

In the discussion of forums, M. Grenier makes use of British examples for purposes of comparison. It seems rather a pity that he did not continue to do this with the temples, and that he did not include the Verulamium theatre in the long section on theatres, because these British structures, built in the same manner as those of Gaul, give further point to the vigour of the Gallic contribution to Roman provincial architecture.

The *Manuel* can be read with pleasure; it is not a mere book of reference. In spite of the vast amount of material gathered together there is something spacious and unhurried about the way in which it is presented. It is like a stroll with a friend down the boulevards of archaeology, but the author expects his readers, especially those belonging to local French societies, to take up pick, shovel and trowel and get to work. There is such a richness of monuments in Roman Gaul, of architectural remains and inscriptions, that the importance of stratigraphy has obtruded itself less urgently on Gallo-Roman archaeologists than on workers in less dowered lands. The *Manuel* shows how much there is still to be done in the checking of details. And it was Déchelette, the begetter of this great series, who laid the foundation of much of the scientific archaeology of the western Empire and who would rejoice to see the growth of interest in the subject he served so well.

OLWEN BROGAN

LES CAVERNES DU VOLP—TROIS FRÈRES—TUC D'AUDOUBERT—À MONTESQUIEU-AVANTÈS (ARIÈGE). *By* HENRI BÉGOUËN and L'ABBÉ H. BREUIL. *Travaux de l'Institut de Paléontologie Humaine: Paris, Arts et Métiers Graphiques*, 1958. *pp.* 109, 32 *plates*, 1 *map and* 115 *text figures.* 4000 *francs.*

The Volp is a small stream that flows through a pleasant little valley in the foothills of the Pyrenees. Today it disappears into a cave which actually is the modern entrance of the Tuc d'Audoubert. In times past the Volp has effected a lot of excavation in the limestone, and one can note two cave complexes which no longer communicate—the one the Trois Frères, the other the Tuc d'Audoubert. Today the former can be reached down a hole at the end of a rock shelter known as Enlène. This rock shelter has yielded a Magdalenian IV industry and quite a number of works of art. But whereas the art on the walls of the Tuc d'Audoubert is apparently almost entirely Magdalenian in date, that on the walls of the Trois Frères is certainly much earlier, and it would seem, therefore, that at the time Enlène was inhabited the cave behind could not be entered. Once inside the cave there are several options: one can go to the right, straight on or to the left; and it is the left-hand passage which leads to the great salon. Just before arriving, on the right-hand side, there is a small alcove, on the wall of which is an engraving of a lion, and below it on a projecting knob of rock was found a burin—doubtless the actual tool used by the artist to make the lion and then left there till the cave was first explored by the Three Brothers, the sons of the Count Bégouën, in 1914.[1] The salon itself is a large chamber of vast height. The walls are covered with engravings of all kinds, and high up near the roof there are others, difficult of access, which include figures of owls. At the end of the salon there is a small tunnel, the walls of which are also covered with engravings, and it is possible to climb up this at the back and reach a sort of window-pulpit some 12 ft. above the floor of the salon, and dominating therefore the mass of engravings on the walls and any congregation present. At the same height to the right of this opening is the well-known picture of the sorcerer—the artist-medicine-man-priest—a figure of a man wholly engraved and partly painted in black, masked, with antler and a tail. The whole *mise en scène* in the Trois Frères cave seems to compel the belief that the cave art was made for a special purpose, and that associated with it there must have been a ritual. Long caves

[1] Actually the cave was first reached by means of a deep pot-hole from the surface. Only later was the entrance through Enlène discovered.

are frightening places, and doubtless those present would have been in a dither by the time they reached the salon—all except the sorcerer—and they would therefore be in an easily suggestible state; and among hunting peoples confidence in the success of the chase is somewhere near half the battle! A somewhat similar state of affairs can be seen at the cave of La Peña de Candamo, not far from Oviedo, in north Spain, where the walls of a little alcove high up near the roof and not very easy of access are completely covered with the figures of animals, and anyone in the alcove entirely dominates the persons below in a large chamber, the walls of which also show animal paintings.

The other cave, the Tuc d'Audoubert, as has been said, is reached today by boat, where the Volp disappears into the hillside. In ancient times there was probably another entrance near the famous clay bisons, but this became blocked in prehistoric times. One follows the stream for a short while and then lands on the left bank and finds oneself in a large chamber where several very fine engravings can be noted. Then a sort of large farmhouse chimney has to be ascended, in the old days by a rope, nowadays by an iron ladder! A narrow and very up-and-down passage has now to be traversed. At one point this was extremely restricted and the reviewer well remembers his emotions when M. Cartailhac got stuck in it and he was on the inner side! Beyond this a new series of galleries are reached, and to one side can be noted imprints on the clay floor of naked human feet. As Count Bégouën's sons had had to break stalactite to get into the cave and there was no evidence of anyone having explored before them, it is reasonable to think that these imprints are those of Magdalenian man. There was also nearby a small collection of cave bear teeth. But soon now the gems of the cave are reached; these are two bisons modelled in clay, resting against a natural boulder. If the cave had not been damp, these would have long ago disintegrated, and we are lucky that these two marvellous sculptures have survived. Close by there are signs of a third that was being modelled on the floor, but had been hardly more than begun. Below them there is a circular area which cannot be explored without destruction, on the clay floor of which there is a figure of a large harpoon and round a small monticule in the middle indentations as if people had hopped round on their heels. Again we have evidence for some ritual, presumably connected with sympathetic magic and food.

We have long waited for Breuil's tremendous work of publication, and when one sees the reproductions of the tracings of the engravings on the walls of the Trois Frères, one can only stand astonished at the ability and patience of the great French prehistorian. One's only regret is that it was not accomplished before the death of his old friend and collaborator Count Bégouën, who, as Professor at Toulouse and as the owner of the sites, did so much for prehistory in the south of France. But the work of decipherment was long and arduous, and as one who often worked with the Abbé Breuil in earlier days I can testify to the skill and utter devotion to accuracy with which his reproductions were made. Again the difficulties resulting from wartime conditions made progress slow and intermittent, but now at last the volume is before us. Besides the line blocks of the engravings there are a map and 32 full-page photographic illustrations: some of these show us the sites, others some of the engravings on the walls, and there are excellent reproductions of the sorcerer as well as of all the clay bison.

Fortunately, both these caves are in private hands and there is a very good chance that the kind of inevitable destruction such as one sees at Castillo and elsewhere, the result of the passage of hundreds of hot sweaty bodies, producing corrosion of the walls—will be avoided. Count Bégouën's sons are themselves keen prehistorians and will doubtless do their best to preserve these unique records of Aurignacian and Magdalenian man.

MILES BURKITT

CHICHEN ITZA AND ITS CENOTE OF SACRIFICE. *By* ALFRED M. TOZZER. Memoirs of the Peabody Museum of Archaeology and Ethnology, Harvard University. Volumes XI and XII. *Cambridge, Mass.*, 1954 and 1957. *pp.* 316. 709 *illustrations.*

These two volumes are a posthumous publication, the fruit of over fifty year's work by the author in the field of Mayan and Mexican civilizations.

Although the work is a comparative study of contemporaneous Toltec and Maya at Chichen Itza, reference is made to researches at all the important sites in Mexico, Guatemala and British Honduras. Thus a wide acquaintance with discoveries up to those made in 1957 is needed in order to appreciate fully the arguments put forward.

The larger part of the work discusses the Comparative Archaeology of the site and the Ethnology of the successive occupants. The history of Chichen Itza and the Cenote of Sacrifice which is of more general interest occupies a much smaller part. A short chapter is devoted to trade and is based largely on a study of the objects recovered from the Cenote.

On archaeological grounds and supported to some extent by post-conquest native records, Dr Tozzer considers that Toltec people appeared at Chichen Itza from Tula in Hidalgo in 10.6.0.0.0. about A.D. 948. That there was contact between Chichen Itza and Tula seems to be in little doubt.

Later Chichen Itza was abandoned and here the native accounts are confusing. Dr Tozzer accepts as his authority the Chilan Balam of Mani and Tizimin where the date is given as Katun I Ahau, and this he interprets as 10.16.0.0.0. (A.D. 1145). Both these accounts state that ' they ' which Dr Tozzer identifies as the Toltec, went to Chakanputun ' where were the houses of those of Itza ' (Tizimin), and, therefore, these Itza could not be the same people as the new arrivals from Chichen Itza.

In Katun 8 Ahau, 10.19.0.0.0. (A.D. 1204) we hear that the Itza, perhaps a Chontal speaking people of Mexican origin, who had ruled at Chakanputun for about 260 years, abandoned their homes and arrived at Chichen Itza in Katun 4 Ahau 11.1.0.0.0. (A.D. 1244). It is stated in Chumayel 11 ' the Itza they were then called ' as though they were new people who had not been there before.

This account of events is not concurred in by many other investigators. Morley, for instance, contends that it was the Itza who first occupied Chichen Itza in Katun 13 Ahau 9.4.0.0.0. (A.D. 514) and abandoned it and moved to Chakanputun in Katun 8 Ahau 9.13.0.0.0. (A.D. 692) to reoccupy Chichen Itza later in Katun 4 Ahau 10.8.0.0.0. (A.D. 987). Thus Morley's Itza are Classic Maya who, when in the region of Ziyancaan Bakhalal, discovered Chichen Itza in 9.1.0.0.0. (A.D. 455) (Mani) and occupied it in 9.4.0.0.0.

These Itza then were probably acquainted with the Long Count system of dating which remained in use until about 10.4.0.0.0. by which time, the Itza were living in Chakanputun.

Dr Tozzer on the other hand maintains that the Itza, who were described as ' those who spoke the language brokenly ', first appeared on the scene and were recognized by that name at Chakanputun after Long Count had ceased to be used and therefore we can presume that they had no knowledge of this method of dating.

No dated material is found at Chakanputun or nearer than Etzná where there are several Long Count dates, the latest being 9.17.12. ?. ?. by which time, the Itza, according to Morley, had been settled at Chakanputun for some time. After the reoccupation of Chichen Itza, we are told in Chumayel 11 ' katun 13 ahau was the katun when they founded the town of Mayapan ' (A.D. 1283). Morley, on this matter, gives the date as between Katun 6 and Katun 4.

Bishop Landa in his ' Relación ' states that the city of Mayapan lasted for more than 500 years before it was abandoned. Almost all authorities, including Landa, agree that the date

of the fall and abandonment of Mayapan was in Katun 8 Ahau (A.D. 1441). If we are to accept Landa's statement, Mayapan was founded in A.D. 941 or earlier, which is between Katuns 6 and 4, as Morley stated. This date cannot be reconciled in any way with Dr Tozzer's scheme of dating which becomes unacceptable.

After the fall of Mayapan, the Itza departed to Lake Peten Itza (Morley). Chichen Itza declined in importance and by 1560, when Landa visited it, was overgrown by trees. It is probable, however, that the Itza left at the break up of the League of Mayapan (A.D. 1194).

The League of Mayapan, a name coined by Brinton, has always appeared to be an important feature in the later history of the Maya. Dr Tozzer considers that it was only short lived, contrary to the more generally accepted view, and that the importance of the Xiu of Uxmal, one of the members of the league, has been greatly exaggerated although this does not agree with statements in the Chilan Balam of Mani and Tizimin.

The Cenote, a large natural cistern in the limestone, is the most important of many cisterns into which articles, prized by their owners, were thrown as sacrifices in periods of drought. Human sacrifice was practised but of skeletal remains so little has been recovered that we must believe, if sacrifice were frequent, that the bodies were recovered later. The articles found by dredging include, besides large quantities of copal, jades which certainly originated in the Classic centres further south and articles of gold. Among the gold articles, some of the most interesting are the discs decorated in repoussé with scenes which appear to represent warlike incidents in the fall of Chichen Itza. The figures in these scenes are always victorious Toltec and vanquished Maya.

Copious tables giving comparisons of features from sites over the whole area and listing architectural, ethnological and other features are provided.

The Bibliography is very full, covering nearly the whole field of Maya and Mexican research.

G. A. BATEMAN

SYLLOGE OF COINS OF THE BRITISH ISLES. I. Fitzwilliam Museum, Cambridge. Part I. Ancient British and Anglo-Saxon Coins. *By* PHILIP GRIERSON. *Published for the British Academy by Oxford University Press, London,* 1958. *pp.* xxii + 70, *including* xxxii *plates.* 35*s.*

This is the first of a series of volumes intended to provide illustrations of many thousands of coins preserved in collections in this country and abroad in such a way as to make them available for purposes of comparison. It deals with the Ancient British and Anglo-Saxon coins in the Fitzwilliam Museum at Cambridge, and will shortly be followed by one devoted to the Anglo-Saxon coins in the Hunterian and Coats Collections at Glasgow—an essential feature of this project being that each volume in turn should deal with one particular collection or locally-associated group of collections. The only coins excluded from the project are Roman coins struck in Britain or relating to Britain—of these there are very few in the Cambridge collection. The idea of a *Sylloge of Coins of the British Isles* originated with the British Numismatic Society. It has received the support of the British Academy, which has appointed a Committee to carry into effect this admirable project, to which each of these bodies has given financial assistance.

An account of the origin and growth of the Fitzwilliam Collection, and of the Trinity College Collection deposited there on loan in 1937, is given in his Introduction by Mr Philip Grierson, the Honorary Keeper of the Coins. On the 32 plates 994 coins are illustrated, of which 216 are assigned to the Ancient British category (with the reservation that some may be Gaulish). On the page facing each plate, details of each coin represented

there are given, not only weight, die-axis, and, when these are known, provenance and former ownership, but also the type, as well as any name of king or moneyer or mint, or other legend, with variant spellings as these occur. Expert comment, numismatic and historical, as, for example, on the authenticity of a dozen or so doubtful coins, is given from time to time by Mr Grierson, to whom numismatic and historical studies were already deeply indebted. There is also a valuable ' Index of Mints ' and ' Index of Anglo-Saxon Kings and Moneyers ', and a ' List of Books and Periodicals referred to ' which covers the outstanding numismatic authorities on the period. The general aim of rendering the identification of types and dies as simple as possible has been successfully achieved, so that the eye can readily distinguish, for instance, an interruption in a sequence of types.

As Sir Frank Stenton observes in his Foreword, hardly any of the collections of coins have been adequately catalogued, and some are virtually inaccessible. Even the major catalogues are out of date; over 2000 coins are believed to have been added to the National Collection (which now contains some 10,000 Anglo-Saxon coins) since the publication of the British Museum Catalogue.[1] The *Catalogue of a Selection from the British and English Coins in the Fitzwilliam Museum* published in 1867 covered, as Mr Grierson observes, no more than nine Ancient British and nineteen Anglo-Saxon coins. Much coin-evidence not yet available in print will fortunately come to light as the publication of the *Sylloge* proceeds. It is of course unnecessary to dwell on the importance of the evidence of accompanying coins—as, for example, with the famous Sutton Hoo ship-burial—in archaeological discovery. Other objects too can on occasion be advantageously brought into comparison with coins. Mr R. H. M. Dolley has pointed out to me that numismatic evidence can be used to date more closely the representation of a certain Godwine *minister* and Godgyth *monacha* on a double seal-die in ivory recently published by Mr A. B. Tonnochy.[2] On Godwine's seal the bearded head and full arm resemble the portrait busts on certain coins of King Edward the Confessor which are dated by Mr Dolley to the period 1053–1056 (*Sylloge*, 874–87)—the first English coins to show the king bearded—and must have come from the same official die-cutting centre. And further, the female figure on this double seal, which must (as Mr Dolley points out) be dated on numismatic evidence, namely the V-fold drapery, to A.D. 979 to 985, would have been, as he observes, the earlier in date of the two figures, and not the later as Mr Tonnochy suggests. Where documentary and other evidence is scanty and unreliable, numismatic evidence has already enabled substantial contributions to be made to political history, as for example, with the Belgic kings or chieftains, or again with the Viking kingdoms of Northumbria, to cite only two examples; whilst Sir Frank Stenton has commented on the contribution which the series can make to a better understanding of English governmental administration, public economy and artistic achievement in the last phase of the Anglo-Saxon monarchy. Few categories of coins represented in the British Museum Catalogue and other standard catalogues go unrepresented in this first volume of the *Sylloge*. The student of Anglo-Saxon literature, mythology and tradition will regard with interest the ' imaginative variety ' of the silver ' sceattas ' (dated by Mr Grierson ' from the late seventh to the third quarter of the eighth century '), though the 44 ' sceattas ' in the Fitzwilliam volume of the *Sylloge* present only a small proportion of the devices on coins of this type published by G. C. Brooke,[3] some of which devices appear also on stone crosses, in the decoration of manuscripts and on jewellery. The specialist will

[1] C. F. Keary and H. A. Grueber, *Catalogue of English Coins in the British Museum, Anglo-Saxon Series*, 2 vols., London, 1887–93.

[2] *Catalogue of British Seal-dies in the British Museum*, London, British Museum, 1952, pp. 1–2, pl. I, 2a, 2b.

[3] *English Coins*, 3rd ed., London, 1950.

welcome the new material for the study of personal names and place-names, which will also without any doubt serve the purposes of philological study.

This new undertaking, which merits the fullest support, corresponds to the recently-renewed interest in Ancient British and Anglo-Saxon coins which has on the one hand been nurtured by the discovery of fresh hoards (as for example the 200 new coins of the Chester hoard of 1950, not to mention the 883 coins of the Morley St Peter hoard of 1958), and on the other hand by the critical contributions of a new ' school ' of English numismatists, whose work may be found in the *British Numismatic Journal*, the *Numismatic Chronicle* and elsewhere, and to which references (up to 1953) are entered in Mr Wilfred Bonser's *Anglo-Saxon and Celtic Bibliography*, 450–1087, published in 1957. In his Presidential Address for 1958 to the Royal Numismatic Society (printed in the *Numismatic Chronicle*, 1958) Mr C. E. Blunt reviewed post-war work on the period before A.D. 973, and in 1959 he will be giving a similar account of work on the period 973–1066. The history of the Ancient British and Anglo-Saxon coinage in its main outlines is known, but a vast amount of work remains to be done and many problems await investigation. The new *Sylloge*, the first volume of which sets a standard which it will be difficult to rival, will undoubtedly prove to be an indispensable tool in these activities.

F. E. HARMER

JAPAN BEFORE BUDDHISM. (Vol. 10 in the series Ancient Peoples and Places). *By* J. E. KIDDER, JR. *Thames and Hudson, London*, 1959. *pp.* 282. 1 *colour plate*, 108 *photographs*, 65 *line drawings and* 7 *maps*. 25*s*.

In a handsomely produced but moderately priced volume (like all the other books in the same series) Dr Kidder has given us a most comprehensive account of prehistoric Japan. Trained in America, teaching and undertaking field excavations in Japan, widely acquainted with the Japanese archaeologists and literature and author of the *Jomon Pottery of Japan* all qualify him for such a work. Modern archaeology in Japan began with the investigation of Omori shell-mounds by E. S. Morse in 1878 and the first report appeared in English, but a survey of ancient Japan cannot possibly be drawn from sources in western languages. Morse merely started the ball rolling and it has been gaining momentum with the years and not abating even in the post-war readjustments. Some 100,000 sites have been noted so far and it would require some one like Dr Kidder to give us a systematic summary.

The prehistory of Japan has been told in four stages. The Palaeolithic and Mesolithic stage is far from being established though some Palaeolithic-looking stone tools have been found without any association of pottery and have consequently been labelled as ' Pre-pottery '. The Neolithic Stage is founded on firmer grounds and it may be divided into five subdivisions. Dr Kidder, however, warns the reader that the sequence is ' primarily applicable to Honshu ', as it has been worked out mainly from the stratigraphic evidences in the Kanto plain. When one attempts to apply it to the rest of Japan it is seen to be dangerously weak until, for example, in Hokkaido and in Kyūshū, it is virtually meaningless. The Neolithic stage is stated to have been succeeded first by a Bronze-Iron Age and then by the Protohistoric Period. This is again applicable mainly in Kyūshū to southern Honshū. The Island World of Japan stretches like a slender arc along the coast of the Asiatic Continent and there is in effect a considerable amount of telescoping in the chronological sequence which when gone into in detail would fill several larger volumes.

There has been a tendency in Japan to regard the Jomon Neolithic as a distinct culture of the Island World. This was only natural because the prehistory of the mainland is a later development. But much has been done there in recent decades and it is seen that the Neolithic of Japan is but a link in the cultural development of Eastern Asia as a whole. Geo-

graphically a marginal area this string of islands has always been open to influences from the mainland which have arrived in many waves and from many points. In the Bronze-Iron and the Protohistoric stages as well as in the historical times such migrations have the full support of archaeology, but as to the earlier stages the details of such connexions have yet to be worked out.

Dr Kidder has been tempted to mention the gold seal which ' is claimed to have been found in 1784 on Shiga Island ' (p. 92). Reading ' Han Wo-nu-kuo Wang ', the inscription would be better translated as ' King [of the] State [of] Wo-nu [of the] Han [dynasty] '.

The short bibliography is very well selected and the index being fairly complete is useful.

CHÊNG TÊ K'UN

AN ANTHROPOLOGICAL RECONNAISSANCE IN WEST PAKISTAN, 1955. With Appendices on the Archaeology and Natural History of Baluchistan and Bahawalpur. *By* HENRY FIELD. *Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University*, LII (1959). *pp.* xii + 332; 100 *half-tone plates*, 44 *figures*, 9 *separate maps*, 118 *tables*, *with* 16 appendices. $9.75; *bound in cloth*, $12.75.

When Dr Field and his party landed on the bleached shores of Pasni it was with the intention of filling some of the known gaps in the prehistory and physical anthropology of Baluchistan. Relatively little anthropological research has been undertaken in this region and the value of the reconnaissance lies largely in the light which it throws upon the relation of the two main tribal groups, the Baluchis and the Brahuis.

The Brahuis are a sturdily independent folk who scratch a meagre existence from the soil of Sarawan and Jhalawan, in Kalat, during the spring and summer months. At the onset of winter they migrate to the plains, but no tribesman worth his salt would regard home as anywhere but in the hills. Their dialect, Brahuiki, is generally classified as a Dravidian language and their way of life, recorded by Sir Denys Bray in 1913, has changed little in the past forty years.

The Baluchis, on the other hand, speak an Indo-Aryan language, and prefer to live in the lowlands to the west and east of the central Brahui range. They are a relatively settled people, except when the dates ripen in Kech and Panjgur and the population for miles around moves in to help with the harvest. In his study of Baluchi customs Dr Field has purposely followed the lines of Bray's account to facilitate comparison with the Brahuis. Anthropometric data collected at points which range from Mand near the Iranian border to Kalat support the conclusion that these two tribes are racially distinct.

In the course of his journey from Pasni to Quetta, Dr Field visited a number of archaeological sites. Many of these had been recorded by Sir Aurel Stein but six were new discoveries. A certain duplication was inevitable since the choice of routes in this part of Baluchistan is virtually restricted to the two main river valleys. Even so, a second visit to Sari-damb, a small mound in Rakhshan where Stein found no pottery, produced sherds which link the site with the Kulli, Nal and Shahi Tump cultures.

This is not an isolated example of the value of resurvey. Dr A. Ghosh, Director-General of Archaeology in India, had much the same experience in Bikanir. Stein had failed to locate any Chalcolithic sites east of Fort Abbas in Bahawalpur yet subsequent reconnaissance revealed a number of Harappa mounds in the valleys of the ' lost ' Sarasvati and Drishadvati rivers. The inclusion in the present work of a preliminary report by Dr Ghosh on these and later sites is valuable, particularly in the absence of more substantive publications.

At the end of his survey in Baluchistan, Dr Field spent a week in the Cholistan region of Bahawalpur. The pottery collected from eleven mounds has been described by Dr F. A.

Khan, now Director of the Department of Archaeology, Pakistan, as ' a uniform group ' which ' is undoubtedly the product of the Harappans '. One site, however, calls for comment. At Lurewala three kinds of pottery were noted. Several of the sherds illustrated bear a strong resemblance to the painted pottery of the Ravi culture from Rupar, E. Punjab, and from Cemetery H at Harappa. The stylized bulls or possible centaurs on fig. 30, 4, bear the same small white ringed dots, set usually on haunch and shoulder, which appear on a sherd from Cemetery H (M. S. Vats, *Excavations at Harappa*, II, pl. LXIX, 18) and almost identical beasts are shown on another of the burial pots (Vats, pl. LXII, 13). The possibility of a post-Harappa occupation at Lurewala should therefore be borne in mind.

BEATRICE DE CARDI

ARCHAEOLOGY IN CHINA. Volume I: Prehistoric China. *By* CHÊNG TÊ K'UN. *Cambridge, Heffer & Sons*, 1959. *pp.* 156. 46 *plates*, 30 *text-figures*, 5 *tables*, 3 *maps*. 45*s*.

This book is a detailed account of the main published results of prehistoric research in China since its beginnings early in the present century. The subject has not previously been presented in a western language on such a firm geographical basis. China is here divided into six cultural regions, in the north the near-desert areas of the Gobi and Hsinkiang, and the less arid Manchuria; in the centre the Yellow River plain, the cradle of the most advanced neolithic and subsequent bronze age cultures; and the Yangtze Valley and South China.

Not all these divisions have the same validity. While the boundary separating the Yellow River valley from the uplands and semi-desert country to the north is of primary importance (and very competently appreciated by the author) the distinction which is made between the Lower Yangtze valley and the south-east region of China generally is, on the evidence of finds, not really significant. The character, on the other hand, of the lingering neolithic of the Upper Yangtze, in Szechuan province, is individual, and it is here that Mr Chêng, from personal knowledge, makes his most important contribution to prehistoric studies.

Within this framework Mr Chêng's text is virtually a summary of the most important literature of the subject. He moves from region to region and site to site, assigning every fact to its source. He attempts no fresh interpretations. Praiseworthy as such objectivity perhaps is at the present stage of the study, the author seems rather too reluctant to utter criticism of the evidence he presents. If lists of artifacts are too often given without illustration, if there is an almost total lack of excavation sections and distribution maps, the fault lies with the inadequate methods and reports of Chinese archaeologists published in the past and often still published. Mr Chêng in self-defence should have made this clear. He should also, in the interests of the specialist reader for whom he writes, explain more adequately the issues in controversial questions. For example, his distinction of a Mesolithic Age and a ' Gobi culture ' is a dubious one, abandoned by the Peking Institute of Archaeology in its latest handbook. Similarly, in view of the crucial problem of local invention and western influence, one would wish for a fuller explanation of the strange contrast between the painted-pottery neolithic of Kansu, i.e. the north-western province of the culture, with that characteristic of the central plain. Mr Chêng fails to mention that in Kansu sites of both types occur in fairly close proximity. Oddly, he omits mention of the white slip which is a very distinctive trait of the central plain.

I find that the précis is not always quite accurate. At the neolithic village of Pan Po, for example, the round hut-foundation was not ' the most common type ' (p. 75), but no more common, according to the report, than the rectangular foundation. Nor does the report state that the largest building on this site was built on a ' prepared platform '. It should

be made clear too that the length of the hut, 20 metres, was inferred from an arrangement of post-holes, half the foundation having been destroyed. Few readers familiar with the published data would accept as unhesitatingly as Mr Chêng the case for an early stage of the Yang-shao culture in Honan. In speaking of the type site at Lung Shan the author twice refers to the pisé wall surrounding the settlement as belonging to the neolithic settlement. This seemed at least dubious in the original report, and the present Peking view is that the wall may belong to the Eastern Chou period. The wall has hitherto been cited as an important link between the Lung Shan neolithic and the Shang bronze age.

These minor inaccuracies detract little from the excellent documentation of the neolithic scene which Mr Chêng gives: but in reviving the theory of a Hsiao T'un or Grey Pottery culture he does real mischief. This idea was advanced by Li Chi in the pre-war years when the conception of ' culture ' in China was all too much a matter of potsherds. A Grey Pottery culture is no longer held to be a cultural entity by any of the Mainland Chinese authorities. The grey pottery ware with its own peculiar vessel-shapes appears in central China associated with both Yang-shao and Lung Shan material. It is closely related to the pottery of the Shang bronze age, surviving later than the more distinctive neolithic wares. But this does not give a ' grey pottery people ' the social and historical status of a ' culture ' in the sense to which prehistorians are accustomed. Wherever evidence exists, excavated levels containing only grey pottery are later than those with the characteristic Yangshao and Lung Shan wares.

It becomes clear that the hitherto accepted cultural divisions are less and less helpful to an understanding of Chinese prehistory and proto-history. They were adopted when pottery provided almost the only criterion and in imitation of the cultural classification established for western Europe and Britain. But China, or at least central China, never was, like these regions, a quite sparsely populated country lying on the edge of more populous and more inventive civilizations from which cultural influences arrived in more or less definable parcels to found distinct cultural traditions of some duration. In these respects Central China rather resembled the river valley civilizations of the Near East, in which ideas were rapidly diffused among progressive peasant communities, and differences of ceramic traditions signify less historically than other aspects of the culture.

Features of the neolithic age of Central China which Mr Chêng does not sufficiently stress are the discrepancy between the geographical distribution of the Yangshao and Lungshan potteries, and the distributions of types of habitation sites, methods of burial and stone tools. It is surprising that he does not reproduce the important distribution map of different types of stone sickle published by An Chih-min in 1955, for this is another culture trait which fails to coincide with the Yang-shao and Lung Shan ceramic provinces. There are really no grounds for naming the semi-lunar stone knife as ' the typical late Neolithic agricultural implement ' (p. 75). The bewilderingly large number of ' cultures ', some embracing a quarter of the country, others taking the name of a single site whose pottery seems unrelated to any other, is an indication of the early stage at which our study of Chinese prehistory still stands. In Mr Chêng's classification one ' culture ' embraces others: why the ' Ch'i-Chia culture ' and the ' Ching-Lien Culture ' are subordinated to the ' Hsiao T'un culture ', when they have no connexion with the grey pottery tradition, is obscure. Such questions arising from the classification of neolithic sites increasingly occupy Chinese archaeologists at the present day. Mr Chêng's treatment does not convey the contemporary trends of interpretation in China.

The book is beautifully produced. The list of sites, with the Chinese characters, the abundance of references in the text and a full index complete its usefulness, making it the clearest and most comprehensive work on the subject which has appeared, even when

Chinese and Japanese publication is considered. Mr Chêng is to be congratulated on producing a pioneering work and we look forward to profiting no less from the following seven volumes which he promises in the series.

WILLIAM WATSON

ANCIENT NUMISMATICS: A BRIEF INTRODUCTION. *By* C. H. V. SUTHERLAND. *New York; The American Numismatic Society*, 1958. *pp.* 29. $1.

Dr Sutherland's pamphlet consists of a brief account of the development of numismatics as a scholarly discipline and a survey of the contribution it can make to our knowledge of antiquity. Every ancient historian and archaeologist will read it with profit. Though it does not attempt a systematic bibliography of ancient numismatics, the references in its footnotes provide a most useful coverage of recently published material, and the text gives a lucid and well-balanced account of what the numismatist is trying to do and how his evidence is to be interpreted.

Its only defect is that it claims too much. The author's view is that ancient and modern coins alike ' convey certain absolute documentary information relating to a person or a people at a definite moment of time '. Where, one may ask, are the English coins commemorating the reign of Edward VIII, or what will the Professor Grant of the future make of the fact that the only coins bearing this monarch's name were struck for Fiji, New Guinea, and British East and West Africa ? When literary evidence and the coins conflict, must one always prefer the latter ? If so, Nero and not Claudius constructed the harbour at Ostia, despite the testimony of Dio, Suetonius and Pliny to the contrary. Is the study of dies always reliable for the dating of coins ? Instances are recorded in the early Byzantine period of a new obverse die being paired with reverse dies at least thirty years old, and Dr Walker has noted a muling between Umayyad dies of A. H. 126 and 129 and reverse dies of an Abbasid caliph who lived 130 years later. Do ' the massive hoards of Corinthian silver coins found in South Italy and Sicily ' really indicate ' the primary focus ' of Corinthian trade or only those regions with which the city had an adverse balance of trade which compelled it to export bullion instead of goods ? Dr Sutherland's pamphlet is valuable and suggestive, but the reader must exercise considerable discrimination in determining how far its generalizations are applicable in the individual cases with which he has to deal.

PHILIP GRIERSON

EXCAVATIONS AT CAMERTON, SOMERSET, 1926–56. *By* W. J. WEDLAKE, With a Foreword by SIR MORTIMER WHEELER. *Camerton Excavation Club*, 1958. *pp.* 284, 22 *plates* (*including* 3 *maps and* 5 *plans*), 63 *figures*. £3 3*s*.

This book contains the results of excavations which have been carried out at Camerton in Somerset for the last thirty years, as well as a reconsideration of the Skinner manuscripts.

The Camerton excavations were begun by Dom Ethelbert Horne (to whom the book is dedicated) and Mr Wedlake was associated with him from the beginning. He has been in charge since 1948 and since then the Camerton Excavation Club, which Mr Wedlake formed, has provided the personnel; it is good to know that the work is still continuing. Mr Wedlake is well known to all those who took part in Sir Mortimer Wheeler's excavations at Maiden Castle and elsewhere and the publication of the Camerton excavations will be welcomed, not only by them but by a wider public. Local people, too, will realize that much detail has been published, which is for their greater interest. Sir Mortimer, the President of the Club, writes the Foreword.

The site straddles the Fosse Way; the length from Cirencester to Exeter may be a later addition to this first frontier. The area was occupied in Neolithic times; six stone axes, three

flint ones and many flint arrow-heads belong to this period. Bronze Age man buried his dead hereabouts in round barrows and in the Early Iron Age the three periods of A, B and C have been detected. The fine decorated spindle-whorl is a notable find. Two coins of the Durotriges have been found and four Dobunnic coins which belong to the middle part of that period, as the earliest or the latest are not represented.

It is in Roman-British times that Camerton comes into its own and the activities of these people have been detected over a wide area. The amount of material which has been accumulated over the years is astonishing, it is the result of careful excavation and observation. 1st-century occupation is attested which continued until the 5th century when squatters occupied the site, as they did in many places in the West Country. Building in stone began in the 2nd century. There is evidence of iron-working and a study of pewter casting and its distribution is included.

The excavation of the Saxon cemetery is touched upon. The pottery has been exhaustively studied and the amount of illustration will be welcomed by the enthusiasts.

In another edition some costs could be saved by the rearrangement of plates and a certain amount of repetition avoided. The Camerton Excavation Club and Mr Wedlake in particular are to be congratulated on producing such an exhaustive account of this interesting site; the digging has been very largely the work of enthusiastic volunteers. We are all grateful that it has been possible.

E. M. CLIFFORD

EARLY CHRISTIAN IRELAND. Vol. 8 in the series 'Ancient Peoples and Places'. *By* MÁIRE and LIAM DE PAOR. *Thames and Hudson*, 1958. *pp.* 264, *with* 77 *plate figures*, 5 *maps and* 31 *figures in the text.* 25*s.*

The battlefield of Irish archaeology is strewn with academic corpses, their hearts and eyes long since plucked forth by critical ravens. Under these circumstances, Messrs Thames and Hudson were wise in restricting the scope of their Irish volume, No. 8 in the 'Ancient Peoples and Places' series, to the period from the early fifth to the late twelfth century A.D. The authors, husband and wife, write from the inside—both are Irish, both speak Irish, and both (Mrs de Paor was formerly Máire Mac Dermott) have worked and published in Irish archaeology. Their charming book is however entirely free from that certain parochialism which has tended to characterize the works of not a few of their predecessors. Liam de Paor brings to it his knowledge of the comparative material outside Ireland, and his background in architecture: his wife was for some time assistant to the late Professor Seán Ó Riordáin, unquestionably the central figure in guiding Irish studies back into the mainstream of archaeological Europe. They have together produced what they modestly describe as an attempted summary of the culture of the period.

The book commences with 'Ireland and Rome', and ends with two chapters, on the Vikings (up to the battle of Clontarf, A.D. 1014) and on 'Renaissance and Reform'. Between these relatively stable milestones, the authors have avoided any attempt to produce a chronologically-arranged account of the material culture, and have concentrated their text into three chapters; 'The Monasteries', 'The Life of the People', and 'The Art of the Golden Age'. Under these headings, they have given us a skilful, up-to-date report of all the reliable evidence. The monastic chapter has two useful maps, and benefits from Liam de Paor's own recent survey of Sceilg Mhichíl (or Skellig Michael). 'The Life of the People' inevitably suggests a précis of excavation reports when it refers to living-sites and fortresses, but this is enlivened by sensible, and valuable, comments on the archaic-seeming social structure of Ireland at this stage, and by the use of extracts from early Irish poetry

and textual sources to illustrate aspects of everyday life which have otherwise been revealed through excavation. One might wish that the authors had not side-stepped the question of the northern Irish ' souterrain ware ', virtually the only native pottery of the period, and its origin. They redeem themselves in Chapter I by discussing hanging bowls, two words at which strong men will often go pale and quiet.

' The Art of the Golden Age ' ties together neatly the evidence derived from the illuminated manuscripts and from the elaborate series of High Crosses: the decorative metalwork, a speciality of Mrs de Paor's, is also treated here and in the succeeding chapter on the Vikings, and again in the last chapter, where she reverts once more to shrines and croziers. It would indeed be difficult to find any aspect of Early Christian Ireland which has been omitted, or unfairly glossed over. The bibliography (arranged by chapters) will be of particular value to teachers, as well as to students, of the period. The only criticism that comes to mind is nothing to do with the authors: it is that the book is far too short.

Devotees of Shaw and Wilde will not need to be told that the best English—as easily formal as Merrion Square, as smooth as Guinness—comes out of Dublin. This gracefully written book will reinforce the idea. A final word of praise, for the plate figures at the end, must be given. Not only do we get illustrations of a whole bunch of new objects, but even the familiar scenes and treasures have been served up in fresh style. The perky little wren from Garryduff (pl. 17), the supreme mastery of the Ardagh Chalice (pl. 25), and the stupendous front at Cashel (pl. 70) all can, and should, be frequently brought before us, as tangible reminders of Ireland's greatest centuries: but they are rarely shown with such discernment and sympathy.

CHARLES THOMAS

THE ANTIQUITIES OF JORDAN. *By* G. LANKESTER HARDING. The Lutterworth Press, London, 1959. *pp.* 223, 31 *plates*, 10 *plans and maps*. 25*s*.

This book on Jordan's past history and remains has at long last appeared from the pen of Mr Lankester Harding, from whom we have long expected a guide to the country's ancient monuments. Mr Harding has been in charge of these for some twenty-three years, during which he has made the fullest use of the opportunities open to him to familiarize himself with practically every part of the country. His basic knowledge of the land's history, previously obtained, made him thoroughly ready to grasp and interpret everything that he saw or came to his notice wherever he went; his outstanding flair for making intimate contact with the country and the people have made him an ideal exponent of the various phases which the country has experienced. In many of these Mr Harding himself has taken part, e.g. in the clearance of Jerash, and the discovery of the sites at Qumran, near the West coast of the Dead Sea, where have been found recently the famous Dead Sea Scrolls, the oldest existing manuscripts in ancient Hebrew. Of the area here and the sites the reader is given a full description; here, for the non-specialist we have for the first time a complete account of these sites, as also of the work and discoveries at Jericho by Dr Kathleen Kenyon and her colleagues of the British School of Archaeology in Jerusalem.

Perhaps the outstanding feature of Jordan for the visitor is Petra, the ' Rock of the desert '; to this there is at present no existing guide, so that the chapter thereon in this book is of particular value. It deals with both the Nabataeans who inhabited it and the geography of the site itself, thus taking the place of a separate guide. For the visitor to this remote and difficult region therefore it alone renders the book a *sine qua non*.

Another section of very great interest is that on ancient Jericho. The various excavations by the Germans, the British under Professor Garstang and, more recently, by the British

under Dr Kenyon, provide a full account of the work done here over a long period of time, and take the town's origins back to several thousand years B.C., making it now one of the earliest inhabited sites in the world in origin.

The book has an interesting feature in an account of the relations between the Palestine Archaeological Museum in Jerusalem, and the Palestine Department of Antiquities. Relations between these two institutions have always been very close, and it is to be hoped that this state of affairs will continue as it seems to be doing so far, under the present Trustees and the until recently existing Curator Mr Harding, with his colleagues; for the Museum can be helped greatly by the Department in all its activities, and much of its field work is largely dependent for its progress on the Museum's facilities, e.g., much of the recent work on the Dead Sea Scrolls. This is but a continuation of the policy the Museum has always followed, and it has recently brought aid from Mr John D. Rockefeller, Junr, with a gift from whom it had been originally built.The various help in different directions by different bodies has united to form into a single whole the archaeology of Transjordan, or Jordan as she now is. Not in many places as in Jordan can one see such frequent living examples of Arab history, e.g., the castles of the desert, the Omayyad and Abbassid. There are also many specimens of classical sculpture as, e.g., Icarus and Daedalus, pl. A.7, of which other examples occur in Naples, like these also Hellenistic. For the treatment of these alone the book is worth having, but in its entirety it will be enjoyed by both the armchair historian, and the traveller, as it includes much that can be found nowhere else accessible, or so fully digested.

J. H. Iliffe

EARLY MONASTERIES, BEEHIVE HUTS AND DRY-STONE HOUSES IN THE NEIGHBOURHOOD OF CAHERCIVEEN AND WATERVILLE (CO. KERRY).

By Françoise Henry, *in Proceedings of the Irish Academy*, Vol. 58, Sect. C, No. 3 (1957).

Too few of the earliest medieval settlements in Ireland have been recorded in detail and comprehensive surveys are confined to a few restricted areas. The present study adds materially to our knowledge, covering an area on the west coast, rich in such remains. The most interesting class of monument recorded is the early monastery, of which a number of plans are given. The combination of circular and rectangular buildings, as on Church Island (Beginis), the interesting association of the cells with tombs and crosses, as at Killabuinia, and, above all, the more detailed and scientific account of the remains on the Skellig, provide data which will assist the student of early Christian remains throughout the Celtic world. The plans, necessarily incomplete in the ruined and overgrown state of the monuments, emphasize the need of further clearance and scientific excavation.[1] In addition to the monastic sites the survey includes, stone huts, kilns and other secular groups. The account of the sites is lucid and the author's discussion of the corbelled stone buildings helps to place these primitive structures in their perspective. Dating must necessarily be tentative without excavation, but the crosses and other details go far to confirm the ascription of the monastic remains to the earliest Christian period, before the Viking raids. Many of the secular sites are admittedly of later date.

C. A. Ralegh Radford

[1] One of the more important monastic sites, Church Island (Beginis) has been excavated by Professor O'Kelly; the report is now available in a more recent issue of the Academy's *Proceedings*.

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